

Field Artillery and Fire Support at the Operational Level: An Analysis of Operation Desert Storm and Operation Iraqi Freedom

A Monograph

by

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Abstract

Field Artillery and Fire Support at the Operational Level: An Analysis of Operation Desert Storm and Operation Iraqi Freedom, by MAJ Timothy M. Ratliff, US Army, 44 pages.

This monograph uses the Prussian theorist Carl von Clausewitz's method of critical analysis to analyze Operation Desert Storm and Operation Iraqi Freedom, focusing on how Army and joint fires enabled maneuver at the operational level. The planning and execution of joint fires at the operational level differed in Operation Desert Storm and Operation Iraqi Freedom primarily due to two factors: the differing strategic end states of removing the Iraqi forces from Kuwait in Desert Storm versus removing the Iraqi Baath regime from power in Operation Iraqi Freedom; and the increased emphasis in Operation Iraqi Freedom on joint fires supporting operational maneuver versus the largely independent land and air campaigns of Operation Desert Storm. The US Army should continue to study how Army and joint fires, combined with operational level maneuver, enabled land forces to seize, retain, and exploit the initiative in its most recent campaigns. This understanding will both preserve the Army's hard-won institutional warfighting knowledge and inform plans for future unified land operations.

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Acronyms

ACE	All-Source Collection Element
ACR	Armored Cavalry Regiment
ADP	Army Doctrine Publication
ADRP	Army Doctrine Reference Publication
AHR	Attack Helicopter Regiment
AI	Air Interdiction
ASOC	Air Support Operations Center
ASOG	Air Support Operations Group
ATACMS	Army Tactical Missile System
ATO	Air Tasking Order
BCD	Battlefield Coordination Detachment
BDA	Battle Damage Assessment
CARL	Combined Arms Research Library, Fort Leavenworth, Kansas
CAS	Close Air Support
CENTAF	Central Command Air Forces
CENTCOM	Central Command
CFACC	Combined Forces Air Component Command
CFLCC	Combined Forces Land Component Command
CIA	Central Intelligence Agency
DIVARTY	Division Artillery
DMPI	Desired Mean Point of Impact
DOD	US Department of Defense
DPICM	Dual-Purpose Improved Conventional Munition
FA	Field Artillery
FECC	Fires and Effects Coordination Cell
FM	Field Manual

FROG	Free Rocket Over Ground
FSCL	Fire Support Coordination Line
FSCM	Fire Support Coordination Measure
HE	High Explosive
HPTL	High-Payoff Target List
IADS	Integrated Air Defense System
ID	Infantry Division
JFACC	Joint Force Air Component Commander
JFC	Joint Forces Commander
JTB	Joint Targeting Board
JTF	Joint Task Force
KI	Killbox Interdiction
KTO	Kuwait Theater of Operations
LOC	Lines of Communication
MAW	Marine Aircraft Wing
MEF	Marine Expeditionary Force
MLRS	Multiple Launch Rocket System
MSR	Main Supply Route
OIF	Operation Iraqi Freedom
PAA	Position Area for Artillery
PGM	Precision Guided Munition
RMA	Revolution in Military Affairs
SAAS	School of Advanced Airpower Studies
SEAD	Suppression of Enemy Air Defenses
SOF	Special Operations Forces
TAC	Tactical Command Post
TLAM	Tomahawk Land Attack Missile

TOC	Tactical Operations Center
UAV	Unmanned Aerial Vehicle
UNMOVIC	United Nations Monitoring, Verification, and Inspection Commission
UNSCR	United Nations Security Council Resolution
WMD	Weapon(s) of Mass Destruction

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Introduction

If there is one attitude more dangerous than to assume that a future war will be just like the last one, it is to imagine that it will be so utterly different that we can afford to ignore all the lessons of the last one.

—Sir John Slessor, later Marshal of the Royal Air Force, *Air Power and Armies*, 1936

The United States military is now preparing to face a variety of current and projected challenges after over fifteen years at war. No single issue presently commands the same level of attention and resources that the wars in Afghanistan and Iraq consumed up until recently. Stability and counterinsurgency problems have received the priority of attention and effort during most of the past fifteen years because they were deemed to be the most urgent. Accordingly, continuing to refine the integration of fires with maneuver at the operational level against a peer or near-peer adversary has received less focus. While references to an operational level of war have been removed from current Army doctrine, joint doctrine retains the conceptual framework of three levels of war: the strategic, operational, and tactical. Commanders and staffs at all levels can practice operational art.¹ The operational level generally refers to command echelons from Army corps and equivalent through joint force commander (JFC), and such a frame can help these echelons focus on the concerns most appropriate for their span of control and scale of operations.²

¹ Army and joint doctrine currently have different definitions of operational art. Army doctrine defines operational art as “the pursuit of strategic objectives, in whole or in part, by the arrangement of tactical actions in time, space, and purpose.” Army Doctrine Publication (ADP) 3-0, *Unified Land Operations* (Washington, DC: Government Printing Office, 2016), 4. Joint doctrine defines operational art as “the use of creative thinking by commanders and staffs to design strategies, campaigns, and major operations and organize and employ military forces.” Joint Publication (JP) 3-0, *Joint Operations* (Washington, DC: Government Printing Office, 2011), xii.

² All references to the operational level in this monograph derive from Joint Publication (JP) 3-0, *Joint Operations*, dated August 2011. Current joint doctrine retains the conceptual framework of an operational level of war introduced into US Army doctrine in the 1982 edition of Field Manual (FM) 100-5, *Operations*, rendering the concept applicable to the entire era discussed here. For further reference, see JP 3-0, I-13-14.

Commanders may employ their fires assets in one of two methods, or a combination thereof, at the operational level. Commanders may either retain some assets under control of their headquarters, or may allocate them to subordinate headquarters, with priority and preponderance going to the designated main effort. The US Army should continue to study how Army and joint fires, combined with operational level maneuver, enabled land forces to seize, retain, and exploit the initiative in its most recent campaigns. This understanding will both preserve the Army's hard-won institutional warfighting knowledge and inform plans for future unified land operations. The Prussian soldier and theorist Carl von Clausewitz provided a method translated as "critical analysis...; the application of theoretical truths to actual events."³ Clausewitz's approach includes the "discovery and interpretation of equivocal facts...the tracing of effects back to their causes... [and] the investigation and evaluation of means employed."⁴

General H. Norman Schwarzkopf, the US Central Command (CENTCOM) commander in Operation Desert Storm, was arguably the first true operational-level US combat commander since the Korean War.⁵ Technological advances had changed the scope of operations by 1990; "the 1990 division readily occupied the terrain and assumed the mission of the 1945 corps and the 1990 corps that of the 1945 army...the net result was that [Desert Storm] was fought on the ground with divisions as operational building blocks and corps as practitioners of the operational art."⁶ A US field army has commanded Army corps conducting offensive operations against the conventional military forces of a state actor only twice since 1990: Operation Desert Storm in

³ Carl von Clausewitz, *On War*, edited and translated by Michael Howard and Peter Paret (Princeton, NJ: Princeton University Press, 1976), 156.

⁴ Ibid.

⁵ Stanlis David Milkowski, "After Inch'on: MacArthur's 1950 Campaign in North Korea," *Historical Perspectives of the Operational Art* (Washington, DC: US Army Center of Military History, 2010), 415. For the argument, see 433, 1n.

⁶ John S. Brown, "The Maturation of Operational Art: Operations DESERT SHIELD and DESERT STORM," *Historical Perspectives of the Operational Art*, 443-44.

1991 and the beginning of Operation Iraqi Freedom in 2003. The character of warfare seems to have morphed in recent years, with a preponderance of what have variously been termed “low-intensity,” “hybrid,” “post-modern,” “degenerate,” or simply “new wars.”⁷ There has been much debate over whether the era of state armies fighting each other has receded forever; such a conclusion may yet prove premature. Recently, Secretary of Defense Ashton Carter, who held office from 2015-17, and the two most recent chairmen of the Joint Chiefs of Staff (JCS), have all listed state actors as the gravest threats to US national security.⁸

The planning and execution of joint fires at the operational level differed in Operation Desert Storm and Operation Iraqi Freedom primarily due to two factors: the differing strategic end states of removing the Iraqi forces from Kuwait in Desert Storm versus removing the Iraqi Baath regime from power in Operation Iraqi Freedom; and the increased emphasis in Operation Iraqi Freedom on joint fires supporting operational maneuver versus the largely independent land and air campaigns of Operation Desert Storm. The strategic context and desired end state, operational maneuver plan, and frictions in the process led to differences in fires planning and execution that may provide lessons for future operational planners. Both campaigns illustrate how operational level commanders employed and integrated assets from all components to shape the battlefield and enable operational maneuver. The improved cooperation between the different services in Operation Iraqi Freedom was one major factor that enabled a much smaller force to achieve the more ambitious goal of advancing to Baghdad and deposing the Baathist regime.

⁷ Mary Kaldor, *New and Old Wars: Organized Violence in a Global Era*, 3d ed. (Stanford, CA: Stanford University Press, 2012), 2-3.

⁸ “The Pentagon’s Top Threat? Russia,” *New York Times*, 3 February 2016, accessed 14 December 2016, http://www.nytimes.com/2016/02/03/opinion/the-pentagons-top-threat-russia.html?_r=0; Lisa Ferdinando, “Dempsey: Russia, Terrorists, Cyber Among Top Threats,” *DoD News*, Defense Media Activity, 19 February 2015, accessed 14 December 2016, <http://www.defense.gov/News/Article/Article/604134>; Dan Lamothe, “Russia is greatest threat to the U.S., says Joint Chiefs chairman nominee Gen. Joseph Dunford,” *Washington Post*, 9 July 2015, accessed 14 December 2016, https://www.washingtonpost.com/news/checkpoint/wp/2015/07/09/russia-is-greatest-threat-to-the-u-s-says-joint-chiefs-chairman-nominee-gen-joseph-dunford/?utm_term=.6dbf0e77e39b.

Operations Desert Shield and Desert Storm

The Iraqi President Saddam Hussein's invasion of Kuwait on 2 August 1990 was the first major international crisis after the final easing of Cold War tensions, and a major test for the international order.⁹ Saddam's act of aggression swiftly brought international condemnation backed up by military forces to deter further aggression against Saudi Arabia. The US President, George H. W. Bush, offered the Saudis assistance defending their kingdom, which the Saudis accepted.¹⁰ President Bush announced the US national policy objectives for the crisis on 5 August as "(1) immediate, complete, and unconditional withdrawal of all Iraqi forces from Kuwait, (2) restoration of Kuwait's legitimate government, (3) security and stability of Saudi Arabia and the Persian Gulf, and (4) safety and protection of the lives of American citizens abroad."¹¹ The United Nations Security Council passed a resolution, UNSCR 678, on 22 November 1990, authorizing the use of force to expel the Iraqis from Kuwait if they did not withdraw by 15 January 1991.¹² The commander of US CENTCOM was Army General H. Norman Schwarzkopf, who would oversee the military response.

The US military benefited from several coincidences that left it highly capable of meeting the Iraqi threat. The US Army had been focused primarily on the Soviet threat in Europe until

⁹ Michael A. Reynolds, "The Wars' Entangled Roots," in Beth Bailey and Richard H. Immerman, ed., *Understanding the US Wars in Iraq and Afghanistan* (New York: New York University Press, 2015), 33.

¹⁰ The Saudis had already rejected another offer, made on the condition that US troops not be allowed to set foot in the Muslim holy lands, from a young exile named Osama bin Laden. While bin Laden's offer was preposterous, the Saudis' rejection of him in favor of the US-led coalition would not be without consequences. Reynolds, "The Wars' Entangled Roots," in *Understanding the US Wars in Iraq and Afghanistan*, 33-34.

¹¹ Department of Defense (DOD), *Conduct of the Persian Gulf War: Final Report to Congress* (Washington, DC: Department of Defense, 1992), 19.

¹² David Fisher, *Morality and War: Can War Be Just in the Twenty-First Century?* (Oxford: Oxford University Press, 2011), 194.

very recently, and the military was still in the early stages of restructuring and downsizing.¹³ The military still maintained a high level of readiness and training, improved from its nadir in the 1970s. The Goldwater-Nichols Act of 1986 had streamlined the chain of command and strengthened the authority of combatant commanders, and attempted to improve “jointness” among the services.¹⁴

General Schwarzkopf and his staff developed a campaign in four phases. Phase I, the strategic air campaign, hoped to either “decapitate” Saddam’s regime or force an early resolution to the crisis. Phase II focused on gaining air supremacy in the Kuwait Theater of Operations (KTO). Phase III consisted of battlefield preparation to degrade Iraqi ground forces, and Phase IV, if necessary, would be the offensive ground campaign.¹⁵

General Schwarzkopf decided to personally serve as the coalition joint forces land component commander (JFLCC), partially in response to Saudi and Arab sensitivities.¹⁶ He accordingly chose to organize his forces under service component commands, excepting Special Operations Forces (SOF), instead of establishing and overseeing a joint task force (JTF) at a subordinate level. The Third Army, commanded by Lieutenant General John Yeosock, served as Army Central Command (ARCENT).¹⁷ The Third Army eventually received two corps: XVIII Airborne Corps under Lieutenant General Gary Luck, with Corps Artillery commanded by Brigadier General Fred N. Halley;¹⁸ and VII Corps under Lieutenant General Frederick Franks,

¹³ Dale R. Herspring, *The Pentagon and the Presidency: Civil-Military Relations from FDR to George W. Bush* (Lawrence: University of Kansas Press, 2005), 297.

¹⁴ Ibid., 294.

¹⁵ DOD, *Conduct of the Persian Gulf War*, 74.

¹⁶ Robert H. Scales, Jr., *Certain Victory: The US Army in the Gulf War* (Washington, DC: Office of the Chief of Staff, US Army, 1993), 141.

¹⁷ Richard M. Swain, “*Lucky War:*” *Third Army in Desert Storm* (Fort Leavenworth, KS: US Army Command and General Staff College Press, 1994), 27-28.

¹⁸ Charles Lane Toomey, *XVIII Airborne Corps in Desert Storm: From Planning to Victory* (Central Point, OR: Hellgate Press, 2004), 190.

with Corps Artillery commanded by Brigadier General Creighton W. Abrams, Jr.¹⁹ The Marine Expeditionary Force (MEF) was commanded by Lieutenant General Walt Boomer. The United States provided seven Army and two Marine divisions; a total 380,000 ground troops, 2,200 tanks, and 1,500 combat aircraft, plus 500 combat helicopters, and six carrier battle groups.²⁰ The Saudis and other Arabs formed a parallel chain of command, with Lieutenant General Khalid ibn Sultan of Saudi Arabia commanding the Gulf Cooperation Council ground forces. Aside from the United States, twenty-two armies, eleven air forces, and twenty-three navies participated.²¹

The coalition faced approximately thirty-six Iraqi divisions in the KTO, consisting of 400,000-450,000 troops, 4,000 tanks, and 3,000 artillery pieces. The Iraqis possessed an air force of 1,000 aircraft and integrated air defense systems. The Iraqis also boasted approximately 600 Scud missiles capable of delivering conventional, chemical, and biological warheads, with range extending to Israel and Saudi Arabia. The Iraqis did not yet have nuclear weapons, but their nuclear program was advancing toward that goal. Iraq was a formidable opponent by most estimates, which could inflict prohibitive casualties on any attempt to eject its forces from Kuwait or pursue them into Iraq itself.²²

Third Army was a small headquarters prior to the crisis, with no current US Army doctrine specific to Army-level operations,²³ although a field army was considered a “primarily operational headquarters.”²⁴ General Yeosock focused on force flow and logistics, while he

¹⁹ Stephen A. Bourque, *Jayhawk! The VII Corps in the Persian Gulf War* (Washington, DC: Department of the Army, 2002), 12.

²⁰ R. Ernest Dupuy and Trevor N. Dupuy, *The Harper Encyclopedia of Military History: From 3500 BC to the Present*, 4th Ed. (New York: HarperCollins, 1993), 1479.

²¹ Allen R. Millett, Peter Maslowski, and William B. Feis, *For the Common Defense: A Military History of the United States from 1607 to 2012*, 3d ed. (New York: Free Press, 2012), 595.

²² *Ibid.*, 594-99.

²³ Swain, *Lucky War*, 21.

²⁴ Field Manual (FM) 100-5, *Operations* (Washington, DC: Government Printing Office, 1986), 186.

“deferred to his corps commanders on strategy and tactics.”²⁵ The theater command arrangement gave General Schwarzkopf direct interest in his corps operations, but inhibited the corps commanders’ access up the chain in ways that the other services and allies did not experience.²⁶

Doctrine and technological advances spawned new developments in inter-service tensions, particularly between the Army and the Air Force. The US Army’s keystone doctrine influencing Operation Desert Storm was the 1986 edition of FM 100-5, *Operations*, based on the concept of “AirLand Battle.” Depth was one of the four key tenets of AirLand Battle, fighting the enemy “throughout the depth of his dispositions with fires and with attacks on his flanks, rear, and support echelons.”²⁷ Behind this doctrine, the corps commander benefitted from technology enabling him to strike further than ever before, such as the M270 Multiple Launch Rocket System (MLRS).²⁸ The Army’s extended deep range, with both artillery and its organic aviation, raised the question of who should control fires where only air assets had previously been able to range.²⁹

Dr. Harold R. Winton of the Air University’s School of Advanced Airpower Studies (SAAS) pointed out two key threads among Air Force thought during the same era: the preference for centralized control of air operations at the theater level; and the belief that airpower could dominate warfare, as expressed in Air Force Colonel John A. Warden, III’s *The Air Campaign*.³⁰ As Dr. David E. Johnson summarized in a later RAND report for the Air Force, “although both the Army and the Air Force recognized a degree of mutual interdependence, they

²⁵ Michael R. Gordon and Bernard E. Trainor, *The Generals’ War: The Inside Story of the Conflict in the Gulf* (New York: Little, Brown and Company, 1995), 300-01.

²⁶ Scales, *Certain Victory*, 141.

²⁷ FM 100-5 (1986), 15, 16.

²⁸ In 1990, MLRS was capable of firing rockets out to 32 kilometers, or firing Army Tactical Missile System (ATACMS) missiles, capable of striking out to an unclassified range of approximately 100 kilometers. DOD, *Conduct of the Persian Gulf War*, 752-53; Harold R. Winton, “Partnership and Tension: The Army and Air Force Between Vietnam and Desert Shield,” *Parameters* (Spring 1996): 100-19, accessed 9 April 2017, <http://ssi.armywarcollege.edu/pubs/parameters/articles/96spring/winton.htm>.

²⁹ Winton, “Partnership and Tension.”

³⁰ Ibid.

both clung tenaciously to the institutional imperative that their service was decisive in winning wars.”³¹ The Air Force’s preference for centralized control and the continued quest by some of its leaders for victory through airpower alone were destined to clash with the Army’s vision of air support for the deep battle.

The unification of all fixed-wing air assets under a single Joint Force Air Component Commander (JFACC) was a relatively recent innovation. Air Force Lieutenant General Charles “Chuck” Horner, the Central Command Air Forces (CENTAF) commander, served as CENTCOM’s JFACC throughout the operations, with Air Force Brigadier General Buster Glosson in charge of planning. This arrangement ensured a consolidated air campaign, but many leaders in the Army and Marines (who relinquished some of their own air assets to JFACC control) came to believe that the system was “overcentralized, unresponsive to the needs of the ground forces, and dominated by an Air Force general.”³²

The air campaign plan was gradually developed over the five-month period prior to offensive operations. Colonel Warden developed an initial plan, called Instant Thunder, with his team from the Air Staff at the Pentagon. Warden hoped to achieve US policy objectives through air power exclusively, striking at five different centers of gravity as outlined in his book.³³ General Horner, however, rejected Instant Thunder, particularly the bottom priority given to Iraqi ground forces. He tasked Glosson with developing a more realistic and acceptable plan. General Glosson and a team of CENTAF planners began planning a defensive air campaign, which was the top priority as forces flowed into the theater. Both the defensive plans and the later offensive

³¹ David E. Johnson, *Learning Large Lessons: The Evolving Roles of Ground Power and Air Power in the Post-Cold War Era* (Santa Monica, CA: RAND Corporation, 2007), 17.

³² Gordon and Trainor, *The Generals’ War*, 310-12.

³³ Joint doctrine defines a center of gravity as “the source of power that provides moral or physical strength, freedom of action, or will to act. Also called COG.” Joint Publication (JP) 3-0, *Joint Operations* (Washington, DC: Government Printing Office, 2011), GL-6.

plans retained many of Instant Thunder's concepts and targets, but with an increased focus on Iraqi forces in the KTO and fewer assumptions that air power alone would produce victory.³⁴

The two Army corps had several field artillery brigades available to support their maneuver plans. In total, forty-three field artillery cannon battalions and seven MLRS battalions were available to support fifty-three maneuver battalions, a ratio of nearly one to one.³⁵ The VII Corps was approved to deploy in November 1990, and became the main effort for the planned ground offensive.³⁶ The VII Corps received four field artillery brigades to support operations, with a mixture of 155mm and 8 inch (203mm) howitzers, and MLRS. The 210th Field Artillery (FA) Brigade was placed in direct support³⁷ of the 2d Armored Cavalry Regiment (ACR). Two of the FA brigades, the 42d and 75th, would support 1st Infantry Division's planned breaching operation. Finally, the 142d FA Brigade of the Arkansas National Guard would reinforce³⁸ the 1st (UK) Armoured Division Artillery. One MLRS battalion would support each US armored division.³⁹

As the supporting effort, XVIII Airborne Corps retained its organic 18th FA Brigade and the 212th FA Brigade but transferred the 75th FA Brigade and two battalions to VII Corps. One

³⁴ Thomas A. Keaney and Eliot A. Cohen, *Gulf War Air Power Survey Summary Report* (Washington, DC: Government Printing Office, 1993), 37-38; Buster Glosson, *War With Iraq: Critical Lessons* (Charlotte, NC: Glosson Family Foundation, 2003), 16-18, 24-25.

³⁵ John J. McGrath, *Fire for Effect: Field Artillery and Close Air Support in the US Army* (Fort Leavenworth, KS: Combat Studies Institute Press, 2010), 143.

³⁶ Gordon and Trainor, *The Generals' War*, 153-55.

³⁷ "Direct support is a support relationship requiring a force to support another specific force and authorizing it to answer directly to the supported force's request for assistance." FM 3-09, *Field Artillery Operations and Fire Support* (Washington, DC: Government Printing Office, 2014), 1-33.

³⁸ "Reinforcing is a support relationship requiring a force to support another supporting unit (ADRP 5-0). Only like units (for example artillery to artillery) can be given a reinforcing mission. An R [reinforcing] support relationship requires one field artillery unit to augment the fires of another field artillery unit." FM 3-09 (2014), 1-33.

³⁹ "VII Corps Artillery," *Field Artillery* (December 1991), 11.

155mm self-propelled (SP) battalion and one MLRS battalion from the 196th FA Brigade of the Tennessee National Guard, scheduled to arrive in mid-February, would be allocated to the 18th FA Brigade to mitigate the lost firepower. In the meantime, XVIII Airborne Corps would have to make do with what it had.⁴⁰

General Schwarzkopf and his staff developed the mission statement for the campaign, derived from the policy objectives, to “conduct offensive operations to: (1) neutralize Iraqi National Command Authority, (2) eject Iraqi armed forces from Kuwait, (3) destroy the Republican Guard, (4) as early as possible, destroy Iraq’s ballistic missile, NBC [nuclear, biological, chemical] capability, and (5) assist in the restoration of the legitimate government of Kuwait.”⁴¹ Operation Desert Storm (offensive operations) would commence on 17 January 1991 with the strategic air campaign targeting three Iraqi centers of gravity: the Iraqi national command authority, Iraq’s NBC capabilities, and the Republican Guard Forces Command. The priority would then shift to isolating the KTO and severing Iraqi supply lines, destroying the Republican Guard, and liberating Kuwait City with Arab forces.⁴² General Schwarzkopf placed special emphasis on destroying the Republican Guard.⁴³

The structure of the air campaign followed General Schwarzkopf’s four-phase concept, and evolved with Schwarzkopf’s operations plan. There was never a final, written “air campaign plan;” the daily Air Tasking Orders (ATO) reflected the commander’s intent, decisions, and guidance from briefings. The ATOs depended on intricate synchronization for the first two cycles

⁴⁰ Toomey, *XVIII Airborne Corps in Desert Storm*, 190.

⁴¹ DOD, *Conduct of the Persian Gulf War*, 73.

⁴² *Ibid.*, 74.

⁴³ In his memoirs, Schwarzkopf recalled telling his senior commanders, “I want you to *destroy* the Republican Guard. When you’re done with them, I don’t want them to be an effective fighting force anymore. I don’t want them to exist as a military organization.” H. Norman Schwarzkopf and Peter Petre, *It Doesn’t Take a Hero* (New York: Bantam Books, 1992), 444.

(days) of the campaign, attempting to neutralize the Iraqi command and control systems.⁴⁴ On the night of 17 January 1991, air forces, Army, and naval aviation, in some cases preceded by drones, combined with electronic warfare, struck multiple targets including the Iraqi integrated air defense system (IADS), destroying enough Iraqi radar systems to inhibit their further use. Other air assets struck Iraqi regime infrastructure. Simultaneously, US Navy ships fired Tomahawk Land Attack Missiles (TLAM) at Iraqi regime targets in Baghdad.⁴⁵ The coalition air forces achieved air superiority by the end of the first day of Operation Desert Storm, while the attacks on Iraqi regime and infrastructure targets were less effective than intended.⁴⁶ The Iraqis responded to hostilities by firing Scud missiles at Israel, nearly drawing an Israeli response. Air sorties and SOF were diverted to a frustrating “Scud hunt” for the remainder of the campaign.⁴⁷

The Iraqi air force flew limited sorties, partially due to successful coalition targeting of their ground-based command posts. Most of the Iraqi air force tried merely to survive, and either remained in hardened bunkers or fled to Iran.⁴⁸ On 27 January, General Schwarzkopf declared air supremacy.⁴⁹ Whatever else the Iraqi forces were capable of, the air threat was mostly neutralized.

The synchronization of the air and ground campaigns became a contentious issue well before ground operations commenced, with each service largely developing its own plans for the

⁴⁴ Keaney and Cohen, *Gulf War Air Power Survey Summary Report*, 28.

⁴⁵ Glosson, *War With Iraq*, 120-29.

⁴⁶ Keaney and Cohen, *Gulf War Air Power Survey Summary Report*, 56-7.

⁴⁷ Only US diplomacy kept the Israelis out of the war, potentially preserving the Arab coalition. Gordon and Trainor, *The Generals' War*, 228-29, 246-48; J.B.A. Bailey, *Field Artillery and Firepower* (Annapolis, MD: Naval Institute Press, 2004), 418.

⁴⁸ Gordon and Trainor, *The Generals' War*, 181, 223-24.

⁴⁹ Keaney and Cohen, *Gulf War Air Power Survey Summary Report*, 56-7. The doctrinal definition of air supremacy is “that degree of air superiority wherein the opposing force is incapable of effective interference within the operational area using air and missile threats.” JP 1-02, *Department of Defense Dictionary of Military and Associated Terms* (Washington, DC: Government Printing Office, November 2010, amended through February 2016), 10.

operation. General Schwarzkopf attempted to reconcile the matter by establishing a CENTCOM Joint Targeting Board (JTB) and appointing his deputy, Army Lieutenant General Calvin Waller, to head the board. The JTB was established ten days after the air campaign was already underway, however, and the arguing continued as ground operations became imminent.⁵⁰ Only seventeen percent (202/1185) of the Army's target nominations made the ATOs by the end of January 1991, and the air assets only actually attacked twelve percent (137/1185).⁵¹ Schwarzkopf did not want to attack until the Iraqi forces had been reduced to at least fifty percent strength.⁵² But by early February, Generals Yeosock and Franks grew increasingly concerned that the air campaign was not degrading the opposing Iraqi forces enough to ensure a successful attack:

The ARCENT briefing on the 9th [February 1991] addressed the attrition of the enemy force, noting that it had not reached the 50 percent desired; moreover, it was proceeding at a rate one-half that required. General Stewart displayed a chart showing that, given an increase of 1 percent a day (to 2 percent) in the rate of attrition, the 50 percent point could be reached in two weeks. This, of course, implied an increased investment of air assets in preparation for the ground attack.⁵³

General Boomer, speaking shortly thereafter to Defense Secretary Richard Cheney and General Colin Powell, named the perceived lack of air support for his Marines as his number one concern. Both the Army and the Marines believed since the strategic air campaign had failed to compel Saddam to withdraw, it was time to shift the priority to the Iraqi forces to their immediate front.⁵⁴

The Air Force responded by increasing its targeting of Iraqi artillery and armor, which was expedited by thirty-by-thirty mile "kill boxes" over Kuwait and Iraq (naming its tactics "tank

⁵⁰ Scales, *Certain Victory*, 180-81; Rick Atkinson, *Crusade: The Untold Story of the Persian Gulf War* (New York: Houghton Mifflin, 1993), 220-23.

⁵¹ Gordon and Trainor, *The Generals' War*, 319-20.

⁵² Swain, *Lucky War*, 78; Atkinson, *Crusade*, 236.

⁵³ Swain, *Lucky War*, 123.

⁵⁴ Gordon and Trainor, *The Generals' War*, 306.

plinking” with macabre humor).⁵⁵ Generals Luck and Halley at XVIII Airborne Corps remained dissatisfied, believing the Air Force was still attacking targets based on its own preferences and not theirs.⁵⁶ The command structure and an apparent lack of communication exacerbated the issue; General Schwarzkopf specifically did not want to attack targets too far to the west to prevent the Iraqis from potentially deducing the coalition’s plan.⁵⁷ Only time would tell if Iraqi attrition from the air campaign would significantly facilitate operations on the ground.

The coalition air also targeted Iraqi lines of communication (LOC), but was unable to destroy all the key bridges between Baghdad and Basra. The effort reduced but did not sever Iraqi logistics to the KTO, and contributed to uneven supply distribution. But as long as Iraqi forces maintained their static defenses, they remained able to adequately supply their forces, and a few escape routes remained.⁵⁸

The Army field artillery fired an increasing number of missions during the final week before the ground offensive, concurrent with the increase in air attack of the Iraqi frontline units. The VII Corps performed daily artillery and aviation raids, with emphasis on 1st Cavalry Division deception operations in VII Corps’ western sector, and preparation for the 1st Infantry Division’s planned breach. The primary purposes of the raids were to destroy Iraqi frontline artillery capable of disrupting the initial attack; neutralize command and control nodes to further disrupt Iraqi fire support, intelligence, targeting and decision making; and rehearse the coalition

⁵⁵ The land forces had the authority to verify the results as part of a compromise. Glosson, *War With Iraq*, 105-06, 193, 195-96. The kill box was later enshrined in doctrine “to allow lethal attack against surface targets without further coordination with the establishing commander and without terminal attack control.” JP 3-09, *Joint Fire Support*, (Washington, DC: Government Printing Office, 2010), A-6-7.

⁵⁶ Toomey, *XVIII Airborne Corps in Desert Storm*, 291-2.

⁵⁷ Glosson, *War With Iraq*, 203, 251.

⁵⁸ Keaney and Cohen, *Gulf War Air Power Survey Summary Report*, 98-99.

fire support systems, particularly counterfire.⁵⁹ Successful counterfire was considered vital to offset Iraqi superiority in range and numbers of systems.⁶⁰

The VII Corps employed seventeen field artillery cannon batteries, three MLRS battalions, and six separate MLRS batteries to fire over 14,000 artillery rounds and 4,900 MLRS rockets in its final week of preparation for the breach.⁶¹ General Franks' highest priority for fire support was to reduce the Iraqi indirect and chemical threat capable of disrupting the breach, so VII Corps' artillery focused on destroying Iraqi artillery.⁶² To the west, XVIII Airborne Corps employed its artillery mainly against point targets, and to support cross-border aviation missions. Many Iraqis all along the front, their morale broken by the relentless aerial and artillery bombardment, began to desert and surrender to coalition forces.⁶³

The ground attack (G-Day) was scheduled for 24 February 1991, after final diplomatic efforts failed.⁶⁴ Air support for the ground campaign was based on the concept of push CAS. CAS sorties would "push" to the four primary maneuver forces (VII and XVIII Corps, the Marines, and the Arabs) on a regular basis. If the maneuver forces did not or could not employ them, the aircraft proceeded to strike deeper targets. Thus the maneuver forces would have CAS available continuously, but sorties would not be wasted.⁶⁵

⁵⁹ Counterfire is "fire intended to destroy or neutralize enemy weapons. Includes counterbattery and countermortar fire." JP 3-09 (2010), GL-7.

⁶⁰ Bourque, *Jayhawk!*, 149, 160-64.

⁶¹ These assets formed the equivalent of five cannon and six MLRS battalions. Bourque, *Jayhawk!*, 164.

⁶² Tom Clancy and Fred Franks, Jr., *Into the Storm: A Study in Command* (New York: G.P. Putnam's Sons, 1997), 249.

⁶³ Bourque, *Jayhawk!*, 164; Toomey, *XVIII Airborne Corps in Desert Storm*, 286, 289-90; coalition forces had been dropping leaflets with surrender instructions according to Glosson, *War With Iraq*, 167.

⁶⁴ Schwarzkopf, *It Doesn't Take a Hero*, 515-17.

⁶⁵ Glosson, *War With Iraq*, 251-52.

The operational deception commenced in the east, where the Marine artillery opened fire together with the venerable USS *Missouri* and USS *Wisconsin*, successfully duping the Iraqis into moving their operational reserves toward the Marine and Arab sector. The Marines began breaching the Iraqi defenses on 24 February at 0400 hours.⁶⁶ The XVIII Airborne Corps' initial main effort was the French 6th Light Armored Division, also scheduled to attack at 0400 hours. The 18th FA Brigade, including an MLRS battalion, would reinforce the French to mitigate the local Iraqi force ratio of slightly better than one-to-one. The 18th FA Brigade's assets gave coalition forces a three-to-one advantage in artillery tubes and launchers in this sector, before accounting for harder to measure metrics such as superior target acquisition, counterfire, and command and control.⁶⁷ The reinforcing units provided counterfire and preparatory fires for the French attack along Main Supply Route (MSR) Texas and the seizures of Objectives Chambord and White. Altogether, the 18th fired 2,752 155mm rounds (mostly DPICM) and 291 MLRS rockets onto known and acquired Iraqi positions, destroying Iraqi equipment, men, and morale, and enabling the French to seize their objectives and secure MSR Texas.⁶⁸

Both the Marines and XVIII Airborne Corps encountered unexpectedly light resistance. General Schwarzkopf decided to commence the VII Corps' attack one day earlier than planned.⁶⁹ General Yeosock accordingly informed General Franks. The VII Corps had originally planned a two-hour artillery preparation, and General Franks remained concerned that air interdiction targets beyond the FSCL were not synchronized with his maneuver plan, but the attack would have to commence.⁷⁰ General Abrams reduced the preparation fire for the breach to thirty minutes

⁶⁶ Peter Tsouras and Elmo C. Wright, Jr., with Bruce George, MP, Tim Lister, James Pirious, and Joe Sanderson, "The Ground War," in *Military Lessons of the Gulf War*, ed. Bruce W. Watson (London: Greenhill Books, 1991), 96-97.

⁶⁷ Toomey, *XVIII Airborne Corps in Desert Storm*, 301-03.

⁶⁸ Ibid., 345, 349-51.

⁶⁹ Schwarzkopf, *It Doesn't Take a Hero*, 524-25.

⁷⁰ Clancy and Franks, *Into the Storm*, 255-56, 265-66, 269.

based on the ammunition available, and General Franks accepted the risk.⁷¹ The 1st Infantry Division, with two DIVARTYs and three reinforcing field artillery brigades, commenced its preparation fire at 1430 hours, firing 6,136 artillery rounds and 414 rockets, and began its breaching operation at 1500 hours. The Iraqi 48th Division, already degraded by thirty-nine days of continuous air attack and heavy desertion, only responded with “scattered and ineffective” artillery fire.⁷² As General Abrams later wrote, “the artillery preparation, after the numerous artillery raids and weeks of air strikes, appears to have been the coup de grace that silenced the Iraqi artillery in range of VII Corps’ initial ground attack.”⁷³ After the breach, the 42d FA Brigade supported the 3d Armored Division, the 75th FA Brigade supported the 1st Armored Division, and the 210th FA Brigade supported the 2d Armored Cavalry Regiment (ACR).⁷⁴

The 212th FA Brigade moved all night during 24-25 February in the XVIII Airborne Corps zone to provide general support to the 24th Infantry Division’s movement through the desert. On 26 February, the 212th supported the seizure of Objective GOLD, approximately 20 miles west of Tallil. The 212th’s M110 howitzers and MLRS fired eighty rounds of DPICM and fifty-three rockets in preparation against Iraqi artillery, air defenses, and command posts.⁷⁵ The French 6th Light Armored Division, having achieved its initial objectives, established a screen on XVIII Airborne Corps’ western flank. The 18th FA Brigade was removed from general support

⁷¹ Ibid., 269, 272.

⁷² Swain, *Lucky War*, 232-34. The round count comes from Gordon and Trainor, *The Generals’ War*, 379. A total of 260 cannons and 60 MLRS fired the preparation, according to Clancy and Franks, *Into the Storm*, 274.

⁷³ Creighton W. Abrams, Jr., “The Gulf War and ‘European Artillery’,” *Army Historical Foundation*, 20 January 2015, accessed 7 January 2017, <https://armyhistory.org/the-gulf-war-and-european-artillery/>.

⁷⁴ Clancy and Franks, *Into the Storm*, 394; Bourque, *Jayhawk!*, 252-53.

⁷⁵ Toomey, *XVIII Airborne Corps in Desert Storm*, 373.

and tasked to move eastward to support further corps operations. Both the French and the Americans were comfortable assuming risk on the western flank.⁷⁶

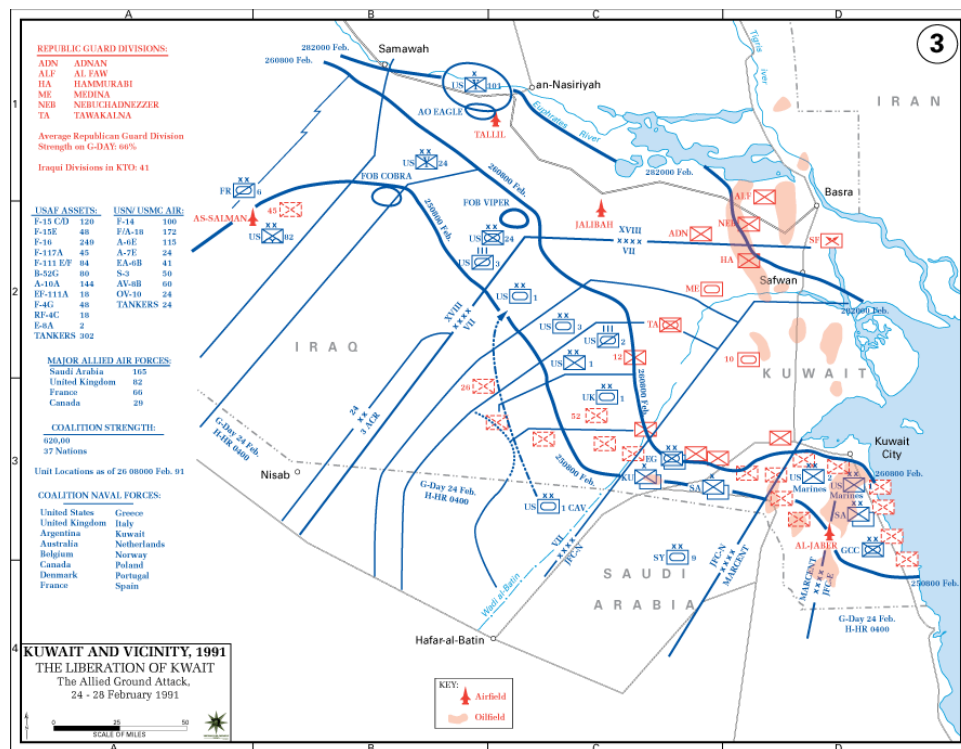


Figure 1. "Kuwait and Vicinity, 1991. The Liberation of Kuwait (sic): The Allied Ground Attack, 24-28 February 1991." Department of History, *United States Military Academy, West Point*, accessed 13 April 2017, <http://www.usma.edu/history/SiteAssets/SitePages/First%20Gulf%20War/GulfWarFirst03.gif>.

In the VII Corps zone, the 75th FA Brigade arrived from the breach site to reinforce the 1st Armored Division, attacking east, at approximately 1200 hours on 26 February. The 75th almost immediately joined the 1st Armored Division Artillery conducting deep strikes against a brigade from the Republican Guard Adnan Division, which had suddenly appeared on 1st AD's left flank. Aviation scouts ensured accurate targeting, and together the two artillery units, aviation assets, and Air Force A-10s pounded the Adnan forces until dawn on the 27th, when their morale broke and most of the survivors fled and were captured. During the night of 26-27 February, the 75th FA Brigade's designated ATACMS battery silenced Iraqi FROG (Free Rocket Over

⁷⁶ Toomey, *XVIII Airborne Corps in Desert Storm*, 370-71.

Ground) sites and other signals acquisitions between ninety-three and 148 kilometers away, again proving the value of organic deep-strike capabilities.⁷⁷

On the night of 26-27 February, VII Corps achieved a double envelopment of the Republican Guard Tawakalna Division, making effective use of deep attacks with artillery and aviation.⁷⁸ The 1st ID conducted a passage of lines through the 2d ACR, and the 210th FA Brigade transitioned from 2d ACR to reinforce 1st ID.⁷⁹ Behind the Tawakalna Division, the Medina Division attempted to prepare a defensive line.

In large-scale joint operations such as Operation Desert Storm, a fire support coordination measure (FSCM) called the Fire Support Coordination Line (FSCL) is often established by the land commander.⁸⁰ The air component is free to engage targets beyond the FSCL without coordination with ground forces, while coordination is required within the FSCL; conversely, the land component must coordinate with the air component to strike beyond the FSCL.⁸¹ Both XVIII Airborne Corps and VII Corps shifted their FSCLs on the night of 26-27 February, bringing the doctrinal debate to a head. The XVIII Airborne Corps shifted its FSCL north of the Euphrates River to facilitate attacks by the 101st Airborne's AH-64 Apache helicopters, but General Horner believed that the 101st had not launched enough attacks to justify inhibiting his ability to engage the fleeing Iraqis. The VII Corps, on the other hand, shifted its

⁷⁷ Bourque, *Jayhawk!*, 351.

⁷⁸ Bourque, *Jayhawk!*, 340-41, 344.

⁷⁹ Clancy and Franks, *Into the Storm*, 393.

⁸⁰ The establishment of Fire Support Coordination Measures are the main technique for commanders to facilitate and expedite the engagement of targets safely beyond friendly forces, and simultaneously to reduce the risk of fratricide. The doctrinal definition of an FSCM is "a measure employed by commanders to facilitate the rapid engagement of targets and simultaneously provide safeguards for friendly forces." JP 3-09 (2010), GL-9.

⁸¹ The doctrinal definition of FSCL reads, in part, "a fire support coordination measure that is established and adjusted by appropriate land or amphibious force commanders within their boundaries in consultation with superior, subordinate, supporting, and affected commanders. Fire support coordination lines facilitate the expeditious attack of surface targets of opportunity beyond the coordinating measure." JP 3-09 (2010), GL-9.

FSCL east of the coastal road running north from Kuwait City in anticipation of advancing past the road. The VII Corps armored attack slowed, again inhibiting the air component from attacking retreating Iraqi forces. General Horner convinced XVIII Airborne Corps to shift its FSCL back south of the Euphrates after seventeen hours of arguing back and forth, but not VII Corps. Only General Schwarzkopf could have ultimately adjudicated the issue, but he was apparently largely unaware and some Iraqi forces escaped the trap due to poor coordination between the services.⁸²

The coalition's overwhelming airpower shaped the destruction of the Medina Division on 27 February in the Battle of Medina Ridge. The official VII Corps account stated that thirty percent more sorties were flown over the Medina Division kill box than any other kill box, targeting mainly logistics but leaving much of the Medina's armor and fighting vehicles intact.⁸³ Once 1st Armored Division elements encountered the Medina positions, therefore, the shaping was over and superior US training, tanks, divisional counterfire capabilities, and CAS quickly overwhelmed those elements that resisted.⁸⁴ By extension, "each tactical engagement was part of an operational concept that simultaneously massed overwhelming combat power against the enemy's front and struck him with artillery and air throughout the depth of his battle position. Franks and his commanders fought the battle exactly as the US Army doctrine, developed in the years after Vietnam, prescribed."⁸⁵ Franks was later accused by some of "an inordinate concern for an orderly advance,"⁸⁶ but he still believed that he lacked adequate knowledge of how air interdiction was shaping his zone beyond the FSCL, and preferred a synchronized advance to

⁸² Gordon and Trainor, *The Generals' War*, 411-13; Glosso, *War With Iraq*, 272-76.

⁸³ Bourque, *Jayhawk!*, 349.

⁸⁴ For an overview as well as specifics of the Battle of Medina Ridge, see Bourque, *Jayhawk!*, 349-59.

⁸⁵ *Ibid.*, 359.

⁸⁶ Millett, Maslowski, and Feis, *For the Common Defense*, 604. Franks would later counter that "it was in the XVIII Corps and Third Army sector that there was a problem of escaping RGFC units," in Clancy and Franks, *Into the Storm*, 417n.

maximize his combat power and reduce the possibility of surprise.⁸⁷ By mid-day on 27 February, General Franks was planning to transition to exploitation and pursuit. VII Corps would encircle and then destroy the Republican Guard Hammurabi Armored Division, and all divisions in contact would exploit.⁸⁸

In the XVIII Airborne Corps zone to the west, Major General Barry McCaffrey's 24th Infantry Division continued to press toward the Republican Guard Hammurabi Division, supported by E-8 Joint Surveillance Target Attack Radar System (JSTARS) aircraft and the equivalent of four brigades of field artillery, including two MLRS battalions. On the night of 27-28 February, JSTARS identified twelve Iraqi maneuver battalions and thirteen field artillery battalions. General McCaffrey recounted what happened best: "Between 0100 and 0330 hours, they fired an awesome display of firepower with rockets streaking across the night. That display essentially broke the will of that enemy armored division, causing their soldiers to begin fleeing to the rear before we actually made contact with their maneuver forces."⁸⁹

The Arab forces advanced past the Marines to officially liberate Kuwait City on 27 February.⁹⁰ The coalition was imposing its will on the enemy, but politically time was running out faster than the commanders on the ground realized. The coalition had fulfilled its mandate under UNSCR 678 and the Iraqis were fleeing Kuwait. President Bush, for a variety of reasons, decided to stop the pursuit.⁹¹ The scheduled ceasefire caused some confusion. The XVIII Airborne Corps "did not publish its first ceasefire order until 0620, directing all units to 'continue

⁸⁷ Clancy and Franks, *Into the Storm*, 402-03; Gordon and Trainor, *The Generals' War*, 302.

⁸⁸ Bourque, *Jayhawk!*, 367.

⁸⁹ Barry R. McCaffrey, quoted in Patrecia Slayden Hollis, "Artillery-The Most Important Factor on the Battlefield," *Field Artillery* (February 1994), 4.

⁹⁰ Gordon and Trainor, *The Generals' War*, 373.

⁹¹ The fulfillment of UNSCR 678's limited mandate to eject Iraqi forces from Kuwait, and the uncertain consequences of removing Saddam, were two primary reasons. Reynolds, "The Wars' Entangled Roots," in *Understanding the US Wars in Iraq and Afghanistan*, 34.

with offensive operations as planned to destroy enemy armored vehicles.’’⁹² General McCaffrey and his 24th ID, with three supporting FA brigades, were determined to fight to the finish, and to destroy as many enemy forces as possible in case the ceasefire failed. McCaffrey planned a thirty-minute barrage at 0400 hours, only four hours before the ceasefire went into effect. The 212th FA Brigade had three of four battalions in position and ready to fire, but retained limited fuel and ammunition; 18th FA Brigade, which had been moving for nearly twenty-four hours after leaving the western flank, arrived only minutes before they were scheduled to commence firing. The 196th was still too far away. The 24th used the available artillery to destroy infantry, artillery, and command posts of the Republican Guard Hammurabi Division. ATACMS missiles were fired at several corps targets just before the ceasefire, but due to technical issues a key pontoon bridge over the Euphrates River remained intact, leaving the Iraqis an escape route when time ran out.⁹³

Decimated Iraqi units were still trying to move out of the theater due to the short notice for the ceasefire, and tensions remained high. On the morning of 2 March, sporadic Iraqi fire in the vicinity of the Rumaylah oil field triggered a ferocious response by the 24th ID, supported by aviation and its three supporting FA brigades.⁹⁴ The 24th ID suffered one wounded soldier, likely killed hundreds of Iraqis, and captured three thousand prisoners. General Schwarzkopf accepted the 24th ID's actions, believing the incident highlighted the urgency of negotiating clearer ceasefire terms.⁹⁵ Schwarzkopf negotiated the final ceasefire on 3 March 1991.⁹⁶

Throughout the operation, the Iraqis had demonstrated an inability to adjust or integrate fires, negating any advantages they held in range or quantities of artillery. Coalition forces rarely came under integrated Iraqi direct and indirect fires, demonstrating a lack of “kill zones” or

⁹² Toomey, *XVIII Airborne Corps in Desert Storm*, 401.

⁹³ Toomey, *XVIII Airborne Corps in Desert Storm*, 401-02.

⁹⁴ *Ibid.*, 408-11.

⁹⁵ Schwarzkopf, *It Doesn't Take a Hero*, 554; Atkinson, *Crusade*, 482-84.

⁹⁶ Atkinson, *Crusade*, 8-10.

engagement areas.⁹⁷ The Iraqis paid dearly, losing between ten and twenty thousand people killed, including perhaps one to two thousand civilians. Approximately 86,000 Iraqi soldiers managed to surrender to coalition forces.⁹⁸ The Iraqi losses in modern equipment and veteran personnel would not be easily replaced.

The coalition forces had driven the Iraqi forces from Kuwait in a remarkably one-sided fashion. Dr. Stephen Biddle has demonstrated that coalition loss rates were “unprecedentedly low” given the scale of operations.⁹⁹ The coalition mitigated the risk of fratricide through several methods, such as embedded liaison teams, joint FSCMs, VS-17 fluorescent panels, and equipment markings. The daily ATOs contained additional measures. Rehearsals at all levels were conducted to mitigate the risk further.¹⁰⁰ Nevertheless, incidents still occurred; the DOD’s final report to Congress listed twenty-eight incidents of fratricide during Operations Desert Shield and Desert Storm, sixteen of which were ground-to-ground and nine of which were air-to-ground, killing thirty-five of the 146 US servicemembers killed in action.¹⁰¹ The coalition’s liberal use of cluster munitions, including DPICM, was highly effective against Iraqi armor and equipment but left duds scattered over the battlefield, which in some cases caused coalition casualties.¹⁰²

The coalition had failed to achieve Schwarzkopf’s objective of destroying the Republican Guard despite its other successes. Half of the Republican Guard’s armor escaped, while approximately a quarter of the Iraqi regular armor forces also escaped the trap.¹⁰³ Saddam

⁹⁷ Bourque, *Jayhawk!*, 325. See also Scales, *Certain Victory*, 257, 298.

⁹⁸ Millett, Maslowski and Feis, *For the Common Defense*, 601.

⁹⁹ Stephen Biddle, *Military Power: Explaining Victory and Defeat in Modern Battle* (Princeton, NJ: Princeton University Press, 2004), 133.

¹⁰⁰ DOD, *Conduct of the Persian Gulf War: Final Report to Congress, Appendices A-S* (Washington, DC: Department of Defense, 1992), M-8-12.

¹⁰¹ DOD, *Conduct of the Persian Gulf War: Appendices A-S*, M-3.

¹⁰² Clancy and Franks, *Into the Storm*, 251, 342.

¹⁰³ Gordon and Trainor, *The Generals’ War*, 429.

Hussein remained in power, and used his remaining military forces to ruthlessly crush Shi'ite and Kurdish uprisings soon after.¹⁰⁴

Army and joint fires played an enormous role in the overall success and doubtless accounted for most of the Iraqi casualties, and both fires and maneuver complemented each other.

The retired UK Major General and artillery and firepower historian J.B.A. Bailey observed:

Maneuver was indispensable to the success of the mission, and it was paralyzing fire, primarily from the air, that made maneuver possible at acceptable cost. It fell to field artillery to provide the tactical fires to support air and ground maneuver, undertaking tasks for which aircraft were ill suited, unavailable, or an inefficient means of delivery.¹⁰⁵

Michael D. Krause and R. Cody Phillips, writing for the US Army Center of Military History, stated that “the allied air campaign was a great success, but it did far less well against dug-in equipment than it did against command and control nodes and logistical assets. This situation changed radically...when ground fighting forced theretofore hidden Iraqi equipment into movement.”¹⁰⁶ Two Air Force officers later quipped, “today, if armies dig in, they die. If they come out of their holes, they die sooner.”¹⁰⁷ Saddam’s forces learned a brutal lesson.

Significant resources were ultimately devoted to attacking Iraqi ground forces, based on the final statistics for the air campaign. Using “strikes”¹⁰⁸ as the metric, 23,430 strikes were

¹⁰⁴ Atkinson, *Crusade*, 488-89.

¹⁰⁵ Bailey, *Field Artillery and Firepower*, 412.

¹⁰⁶ Brown, “The Maturation of Operational Art,” *Historical Perspectives of the Operational Art*, 457.

¹⁰⁷ Michael J. Bodner and William W. Bruner, III; “Tank Plinking,” *Air Force Magazine*, October 1993, accessed 13 December 2016, <http://www.airforcemag.com/MagazineArchive/Pages/1993/October%201993/1093plinking.aspx>.

¹⁰⁸ For these purposes, “strikes” is defined as “meaning occasions on which individual aircraft released ordnance against distinct targets or aimpoints...” Keaney and Cohen, *Gulf War Air Power Survey Summary Report*, 64.

conducted against Iraqi ground forces, or 56.3 percent of the total strikes during the war. Another fifteen percent of the air strikes were still “uncategorized” as of 1993, but many of them may have also been directed against Iraqi ground forces. Therefore, of the approximately 42,000 strikes recorded during the war, as many as seventy percent may have been conducted against Iraqi ground forces. The remainder of the air strikes were categorized as “Control of the Air” (13.9 percent) and “Core Strategic Air Attack” (14.8 percent). Regardless of perceptions, most of the actual ordnance dropped targeted ground forces.¹⁰⁹ During the one hundred hours of the ground campaign, the JFACC launched 697 strike sorties the first day, 629 the second, 574 the third, and 210 the fourth.¹¹⁰

Air power had indisputably made major contributions to the victory. According to General Bailey, “coalition artillery fired only about a quarter of the ammunition expected...this was in large part due to the effectiveness of the preliminary air bombardment.”¹¹¹ Whether the maneuver commanders on the ground had their priorities met is more debatable. The VII Corps Artillery fired 12,281 howitzer rounds, 5,634 MLRS rockets, and twenty-five ATACMS missiles during the one hundred hours of the ground offensive.¹¹² The XVIII Airborne Corps Artillery likely fired somewhat less. The MLRS rockets had an especially terrifying psychological impact on Iraqi forces.¹¹³

After Operation Desert Storm, the idea of a “revolution in military affairs (RMA)” seduced many analysts in the twilight of the twentieth century.¹¹⁴ Desert Storm supposedly

¹⁰⁹ Keaney and Cohen, *Gulf War Air Power Survey Summary Report*, 64-65.

¹¹⁰ Glosson, *War With Iraq*, 276.

¹¹¹ Bailey, *Field Artillery and Firepower*, 418-19.

¹¹² “VII Corps Artillery,” in *Field Artillery* (December 1991), 11.

¹¹³ *Conduct of the Persian Gulf War*, 753.

¹¹⁴ Millett, Maslowski, and Feis, *For the Common Defense*, 634; Knox and Murray, *The Dynamics of Military Revolution*, 190-91; Linn, *The Echo of Battle*, 226.

demonstrated this revolution, driven by technology, whereby the United States could impose its will on any opponent for the foreseeable future. For all the innovations that enabled the overwhelming coalition superiority in Operation Desert Storm, other observers saw incremental development of existing patterns. As General Bailey wrote:

The war followed a readily recognizable historical pattern. It started with a period of deployment, the marshalling of forces, and a static standoff, as each side considered the other and prepared for battle. One side adopted prepared defense. The other planned to attack after winning the firefight with air and artillery, the new “artillery duel,” before executing a decisive maneuver. In these essentials the war would not have been extraordinary in 1870, and an analysis falls readily into the traditional historical structure.¹¹⁵

MacGregor Knox and Williamson Murray were also cautious, in their book on historical military revolutions, writing that Operation Desert Storm represented “less a triumph of American technology than a triumph of *concepts and doctrine* that rested firmly on an understanding of the fundamental nature of war.”¹¹⁶ Their book was published in August 2001, only weeks before the Al Qaeda terrorist attacks on 11 September.¹¹⁷

Operation Iraqi Freedom

Saddam Hussein’s regime remained defiantly in power in 2001, and was still believed to possess weapons of mass destruction (WMDs) despite a decade of sanctions and further bombing campaigns. President George W. Bush and his administration became increasingly convinced that US national security required the removal of Saddam, following the Al Qaeda terrorist attacks of 11 September 2001. The administration believed Saddam had links to Al Qaeda, and feared that Saddam possessed the ability and motivation to provide weapons to terrorists for even worse

¹¹⁵ Bailey, *Field Artillery and Firepower*, 411.

¹¹⁶ The emphasis is in the original. MacGregor Knox and Williamson Murray, *The Dynamics of Military Revolution: 1300-2050* (New York: Cambridge University Press, 2001), 188-89.

¹¹⁷ Cambridge University Press, “The Dynamics of Military Revolution: 1300-2050,” accessed 10 April 2017, <http://www.cambridge.org/us/academic/subjects/history/regional-history-after-1500/dynamics-military-revolution-13002050?format=HB&isbn=9780521800792>.

attacks.¹¹⁸ A possible Iraqi link to Al Qaeda seemed to be strengthened by the confirmed presence of the terrorist Abu Musab Zarqawi (who later founded al Qaeda in Iraq [AQI]) in Iraq).¹¹⁹ On 27 November 2001, Defense Secretary Donald Rumsfeld ordered the CENTCOM commander, Army General Tommy Franks, to review and update plans for Saddam's removal.¹²⁰

The primary objective of the planned campaign was the removal of Saddam Hussein and his Baath Party from power. The secondary objectives included finding and neutralizing the suspected WMDs, preventing the Iraqis from sabotaging oil wells or the environment, and isolating and destroying the Baathist regime and its military forces.¹²¹ General Franks intended to achieve those objectives in four phases: "Phase I-Preparation. Phase II-Shape the Battlespace. Phase III-Decisive Operations. Phase IV-Post-Hostility Operations."¹²²

General Franks still retained responsibility for operations in Afghanistan, so he elected for the US Third Army commander, Lieutenant General David McKiernan, to serve as the CFLCC for the Iraq campaign.¹²³ McKiernan had run the VII Corps jump tactical command post (TAC) for General Frederick Franks during Operation Desert Storm, providing him a first-hand

¹¹⁸ As National Security Advisor Condoleezza Rice warned, "we don't want the smoking gun to be a mushroom cloud." Reynolds, "The Wars' Entangled Roots," in *Understanding the US Wars in Iraq and Afghanistan*, 45-46.

¹¹⁹ Tommy Franks and Malcolm McConnell, *American Soldier* (New York: HarperCollins, 2004), 332.

¹²⁰ Walter L. Perry, "Planning the War and the Transition to Peace," *Decisive War, Elusive Peace* (Santa Monica, CA: RAND Corporation, 2015), 31; Franks, *American Soldier*, 315.

¹²¹ Williamson Murray and Robert H. Scales, Jr., *The Iraq War: A Military History* (Cambridge, MA: Harvard University Press, 2003), 89-90.

¹²² Franks, *American Soldier*, 350.

¹²³ Murray and Scales, *The Iraq War*, 60.

apprenticeship to operational level command in combat.¹²⁴ Air Force Lieutenant General T.

Michael “Buzz” Moseley served as the CFACC.¹²⁵

The Bush administration, especially Secretary Rumsfeld, heavily influenced the planning for OIF. Secretary Rumsfeld vigorously championed a policy of ‘transformation,’ favored civilian advisors over the US military bureaucracy, and relentlessly pressured the military to restructure towards a smaller, lighter, more agile force that sought victory through superior intelligence, speed, and precision.¹²⁶ General Franks and his planners received considerable constraints on “the size of the force, the time required to deploy it, its ability to quickly prevail, and the negative effects of inflicting noncombatant casualties. OIF was to be a war of liberation and not conquest.”¹²⁷ In short, the smallest force possible was expected to rapidly deploy, depose Saddam in a lightning, surgical campaign, and receive the thanks of a grateful, liberated people before quickly establishing an acceptable Iraqi government and transitioning responsibility for security.¹²⁸ General Franks, an artilleryman by background, developed a matrix he termed “lines and slices” to provide a targeting framework. The “operational fires” line of effort would target Iraqi leadership, internal security apparatus, Republican Guard, and regular army forces.¹²⁹

The UN Security Council passed UNSCR 1441 on 8 November 2002, offering Iraq a “final opportunity to comply with its disarmament obligations”¹³⁰ and requiring compliance with

¹²⁴ Bourque, *Jayhawk!*, 366-67.

¹²⁵ Michael R. Gordon and Bernard E. Trainor, *Cobra II: The Inside Story of the Invasion and Occupation of Iraq* (New York: Pantheon Books, 2006), 44.

¹²⁶ Herspring, *The Pentagon and the Presidency*, 380-81; Reynolds, “The Wars’ Entangled Roots,” in *Understanding the US Wars in Iraq and Afghanistan*, 44.

¹²⁷ Perry, “Planning the War and the Transition to Peace,” *Decisive War, Elusive Peace*, 55.

¹²⁸ At one point, Secretary Rumsfeld favored a plan to invade Iraq with 15,000 troops. Conrad E. Crane, “Military Strategy in Afghanistan and Iraq,” in *Understanding the US Wars in Iraq and Afghanistan*, 129.

¹²⁹ Franks, *American Soldier*, 335-41.

¹³⁰ United Nations Security Council, “Resolution 1441 (2002),” 8 November 2002, accessed 10 April 2017, [http://undocs.org/S/RES/1441\(2002\)](http://undocs.org/S/RES/1441(2002)).

the UN Monitoring, Verification, and Inspection Commission (UNMOVIC).¹³¹ Saddam's actions were deceitful, but it was unclear how urgent the threat was.¹³² The US government and UK governments lacked the clear invitation Saudi Arabia had provided in 1990, and encountered difficulties securing basing and transit rights to build their forces in the sovereign states surrounding Iraq. Only Kuwait accepted the risks. On 11 January 2003, Secretary Rumsfeld ordered 60,000 US troops with supporting naval and air forces to deploy. The UK followed suit on 20 January, committing 26,000 more troops together with Royal Air Force assets. As forces moved to the region, time began to run out for a diplomatic resolution.¹³³

General McKiernan's forces would include Lieutenant General William S. Wallace's V Corps, with three subordinate US Army divisions; and Lieutenant General James Conway's I MEF, with one Marine and one British division, an additional Marine task force dubbed Task Force Tarawa, and a Marine Aircraft Wing (MAW).¹³⁴ General McKiernan was concerned with the invasion plan, believing an attack without sufficient forces risked losing momentum, while lacking flexibility to exploit success respond to unforeseen contingencies. Most significantly, he wanted both V Corps and I MEF to launch a coordinated attack from the start, instead of trickling forces into theater, with the air and ground campaign commencing nearly simultaneously. The 4th Infantry Division would open a second front by attacking from Turkey into northern Iraq, pending Turkish approval.¹³⁵ The revised plan, called Cobra II, would have obvious ramifications for the joint fires plan: the CFLCC and CFACC would have to rely on close coordination without an air campaign of any length to degrade Iraqi forces.

¹³¹ Fisher, *Morality and War*, 194-95.

¹³² Ibid., 205-06.

¹³³ John Keegan, *The Iraq War* (New York: Random House, 2005), 100-01.

¹³⁴ Murray and Scales, *The Iraq War*, 60-65; Gordon and Trainor, *Cobra II*, 235.

¹³⁵ Gordon and Trainor, *Cobra II*, 88-90.

Early iterations of the invasion plan prescribed a ten to sixteen-day air campaign designed to weaken Saddam's regime and forces while forces flowed into theater.¹³⁶ General Franks, like General McKiernan, disagreed with the air planners. A preliminary air campaign of any length would eliminate the possibility of strategic and operational surprise. Iraqi forces were spread all over the country, and not concentrated like they were in Operation Desert Storm. Alerting the Iraqis would give them time to reorient, concentrate against the smaller coalition force, and target it with conventional weapons or the feared WMDs.¹³⁷ Operation Southern Focus, ostensibly intended to enforce a no-fly zone, had already achieved air superiority over southern Iraq and degraded Iraqi air defenses since June 2002.¹³⁸ General Moseley, who had initially supported a longer air campaign, made support of General McKiernan's land forces his new priority.¹³⁹ The objectives of the air campaign were revised to:

- Facilitate advance of the 3d Infantry Division and the 1st Marine Division.
- Protect the eastern flank of 1st Marine Expeditionary Force.
- Destroy the Republican Guards divisions defending Baghdad.
- Fix Iraqi forces in northern Iraq along the "Green Line."¹⁴⁰

The priority of supporting maneuver forces would deliver better results than efforts to "decapitate" Saddam's regime; none of the top two hundred key members of the Baathist regime were killed by an air strike.¹⁴¹

US forces had not deployed to Afghanistan with their field artillery, although logistical considerations were paramount.¹⁴² The terrain of Iraq was more conducive, so the Army and

¹³⁶ Ibid., 44-45, 88-89.

¹³⁷ Keegan, *The Iraq War*, 141-42.

¹³⁸ Bruce R. Pirnie, John Gordon IV, Richard R. Brennan, Jr., Forrest E. Morgan, Alexander C. Hou, Chad Yost, "Air Operations," *Decisive War, Elusive Peace*, 149-50, 152.

¹³⁹ Gordon and Trainor, *Cobra II*, 322.

¹⁴⁰ Pirnie, et al., "Air Operations," *Decisive War, Elusive Peace*, 158.

¹⁴¹ Gordon and Trainor, *Cobra II*, 177.

¹⁴² McGrath, *Fire for Effect*, 149-51.

Marines deployed artillery. The V Corps Artillery, commanded by Colonel Theodore Janosko, had the 41st and the 214th FA Brigades available, with a total of three MLRS battalions and one 155mm towed battalion.¹⁴³ The single corps streamlined the Army's joint fires plan, with one force field artillery headquarters for the operation. Colonel Janosko planned to mass corps artillery assets for the initial attack, then the 41st would reinforce the 101st Airborne Division and the 214th would be tasked general support reinforcing the 3d Infantry Division.¹⁴⁴ A third FA brigade, the 75th, was reorganized to conduct site exploitation should any WMDs be found, instead of supporting the 4th ID on the northern front. Artillery, like everything else, was subject to reduction in the quest for an ever smaller and faster invasion force.¹⁴⁵ The V Corps would accordingly rely heavily on its air support. After the final operations order briefing, General Wallace mused to the 4th Air Support Operations Group (ASOG) commander, "Kid, I hope your guys are good, because we damned sure don't have enough artillery to do it by ourselves."¹⁴⁶

The V Corps and the 4th ASOG had worked for months to streamline their processes.¹⁴⁷ The All-Source Collection Element (ACE), Fires and Effects Coordination Cell (FECC), and Air Support Operations Center (ASOC) were co-located in the V Corps Main Command Post (CP), with an ASOG element in the corps tactical command post (TAC). This system of organization ensured continuous support, and placing these three elements adjacent to each other was ideal for information sharing and responsive targeting at the corps level.¹⁴⁸ V Corps and 4th ASOG

¹⁴³ Charles E. Kirkpatrick, "Joint Fires as They Were Meant to Be: V Corps and the 4th Air Support Operations Group During Operation Iraqi Freedom" (Arlington, VA: Association of the United States Army, 2004), 12.

¹⁴⁴ Theodore J. Janosko and Robert G. Cheatham, Jr., "The Sound of Thunder," *Field Artillery* (September-October 2003) 35.

¹⁴⁵ Gordon and Trainor, *Cobra II*, 82.

¹⁴⁶ Kirkpatrick, "Joint Fires as They Were Meant to Be," 6.

¹⁴⁷ *Ibid.*, 3-4.

¹⁴⁸ *Ibid.*, 4.

intended to focus CAS assets on what they referred to as “corps shaping,” attacking Iraqi units in the corps zone before the 3d Infantry Division closed with the enemy.¹⁴⁹

As General Wallace stated in a later interview, “my Commander’s Intent for Fires was to kill as many bad guys as we could as often as we could so they weren’t effective when we got in direct fire contact.”¹⁵⁰ Specifically, Wallace’s high payoff target list (HPTL), which changed only in order but not in kind throughout the war, was as follows:

- Time-sensitive targets (TSTs), including surface-to-surface missiles and key elements of Saddam’s regime.
- ADA systems.
- Field artillery.
- C2 facilities.
- Armor.¹⁵¹

Wallace’s primary concerns included the Iraqi ability to either mass indirect fires and slow down his formations, or employ ballistic missiles or chemical weapons. Accordingly, he prioritized his corps assets, including CAS, against Iraqi artillery systems.¹⁵²

The new Turkish government, led by Recep Tayyip Erdogan, formally rejected the US basing and transit request on 1 March 2003. If the coalition desired to open a northern front and cooperate with the Kurds, it would not do so by ground through Turkey. The 4th ID began the slow process of rerouting its troops and equipment to Kuwait, and therefore would not be available in time for the initial invasion. In the event, the division was not available until after Baghdad fell to coalition forces.¹⁵³

¹⁴⁹ Kirkpatrick, “Joint Fires as They Were Meant to Be,” 1.

¹⁵⁰ William S. Wallace, quoted in Patrecia Slayden Hollis, “Trained, Adaptable, Flexible Forces=Victory in Iraq,” *Field Artillery* (September-October 2003), 6.

¹⁵¹ Kirkpatrick, “Joint Fires as They Were Meant to Be”, 8.

¹⁵² Hollis, “Victory in Iraq,” 6.

¹⁵³ Keegan, *The Iraq War*, 137-138; Murray and Scales, *The Iraq War*, 62.

One week prior to major combat operations, the air and maritime assets were scheduled to commence “shock and awe” operations against regime infrastructure on 21 March at 2100 hours local time, followed nine hours later by the ground attack. The coalition’s near-simultaneous air and ground attacks were intended to surprise Iraqi leaders who might expect several weeks of aerial bombardment reminiscent of Operation Desert Storm. Oil fires in Southern Iraq raised concerns that Saddam was about to sabotage oil fields and other key infrastructure, so General Franks consulted General McKiernan to see if his land forces could commence the attack two days early. McKiernan responded that he could advance the attack by twenty-four hours, and Franks concurred. The air campaign plan, which was “tightly choreographed” and depended on synchronization of assets from all over the world, was left unchanged and remained scheduled to begin on 21 March.¹⁵⁴ General McKiernan, as the CFLCC, had 122,000 US soldiers and Marines and 21,000 British personnel available.¹⁵⁵ General Moseley had 1,801 aircraft to support operations, excluding Army aviation, of which 863 were US Air Force, 372 were US Marine Corps, 408 were US Navy, and 138 were British, Canadian, or Australian.¹⁵⁶

On 17 March, President Bush issued a final ultimatum, demanding that Saddam and his sons Uday and Qusay leave Iraq within forty-eight hours.¹⁵⁷ After the ultimatum expired, one last attempt was made to remove Saddam prior to the invasion, when two F-117 stealth aircraft struck Dora Farms outside of Baghdad, where the CIA believed it had located Saddam and his sons. The battle damage assessment (BDA) was inconclusive, and Saddam apparently appeared on

¹⁵⁴ Gordon and Trainor, *Cobra II*, 164-68.

¹⁵⁵ Millett, Maslowski, and Feis, *For the Common Defense*, 656.

¹⁵⁶ US CENTAF, “Operation IRAQI FREEDOM-By the Numbers,” (30 April 2003), 6.

¹⁵⁷ Gordon and Trainor, *Cobra II*, 165.

television several hours later, denouncing the strike as a “criminal act” and calling on the Iraqi people to draw their swords, concluding “long live jihad and long live Palestine.”¹⁵⁸ If Saddam was indeed alive, he would not abdicate without a fight.

The final air campaign plan had different priorities for the different regions of Iraq. The main priority remained support to V Corps and I MEF through killbox interdiction (KI) and CAS. Iraq was divided into a series of killboxes, thirty nautical miles by thirty nautical miles, which were subdivided into “keypads” of approximately ten square kilometers. To expedite matters further, “killboxes short of the [FSCL] were considered closed unless opened by a ground commander. Killboxes beyond the FSCL were considered open unless closed by a ground commander.”¹⁵⁹ Like Desert Storm, a system of push CAS would ensure continuous air support.¹⁶⁰ Other regional efforts included support to SOF and Kurdish forces in northern Iraq, and support to SOF to “suppress surface-to-surface missiles in western Iraq.”¹⁶¹

General Wallace’s fire support priorities were faithfully executed as the ground campaign began. At 1519Z hours on 20 March 2003, V Corps fired its first thirteen Block 1a unitary ATACMS at Iraqi corps, division, and artillery command posts approximately 210 kilometers away. These launches by the 214th FA Brigade were the first thirteen unitary ATACMS fired in combat. Over the next five hours, 214th fired forty-seven more Block 1 ATACMS including SEAD, missions against Iraqi ADA and counterbattery assets, and one more unitary ATACMS. The 214th assets then displaced for 1 MEF breaching elements. The 41st FA Brigade fired twenty-two Block 1 ATACMS in addition to 3d Infantry Division’s organic MLRS against three

¹⁵⁸ Gordon and Trainor, *Cobra II*, 169-77; Franks, *American Soldier*, 452-61; the quotations come from the following translation and transcript: “Saddam addresses Iraqi people,” *CNN*, 20 March 2003, accessed 4 March 2017, <http://www.cnn.com/2003/WORLD/meast/03/20/irq.war.saddam.transcript/>.

¹⁵⁹ Pirnie, et al., “Air Operations,” in *Decisive War, Elusive Peace*, 158-59.

¹⁶⁰ *Ibid.*, 164-65.

¹⁶¹ Pirnie, et al., “Air Operations,” in *Decisive War, Elusive Peace*, 159.

different Iraqi division artillery elements. The V Corps' initial preparation fires denied the Iraqis the ability to mass fires above the battery level, and the Iraqi 11th Infantry Division "had ceased to exist as a coherent fighting force."¹⁶² While the Iraqis did not have strong defenses along the border with Kuwait, V Corps' fires facilitated successful breaching operations by the 3d Infantry Division and augmented the fires from 3d Infantry Division Artillery assets. In contrast, the Iraqis fired five surface-to-surface missiles at coalition forces on 20 March with no effect.¹⁶³

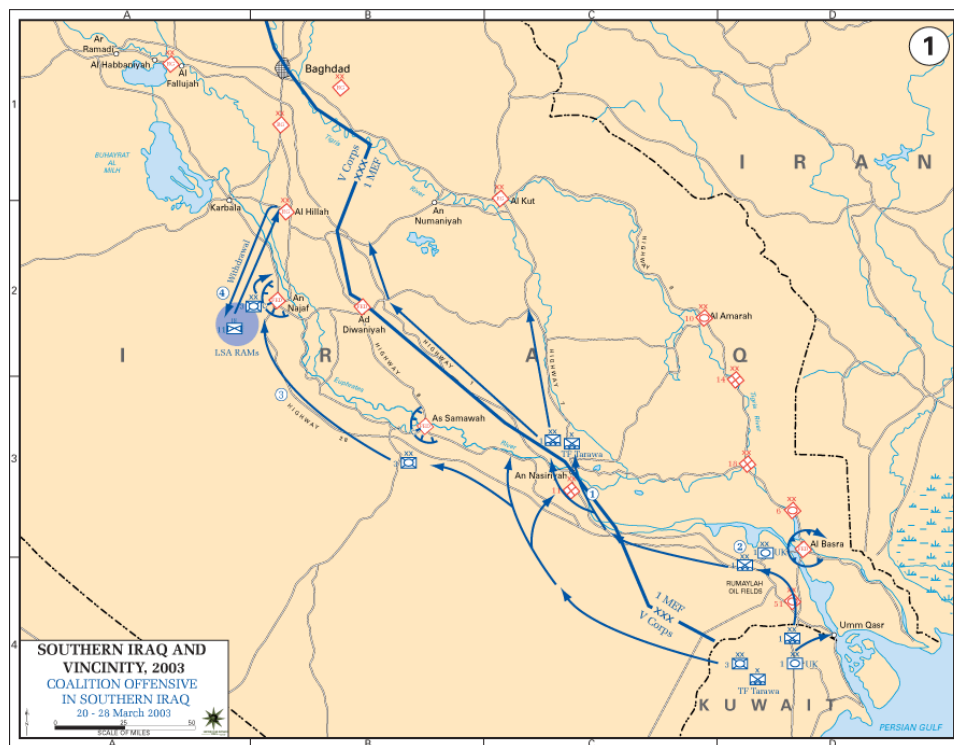


Figure 2. "Southern Iraq and Vicinity (sic), 2003. Coalition Offensive in Southern Iraq, 20-28 March 2003." Department of History, *United States Military Academy, West Point*, accessed 13 April 2017, <http://www.usma.edu/history/SiteAssets/SitePages/Iraq/Iraq01.gif>.

The 3d ID moved north, encountering small elements of the Iraqi 11th Division dispersed near An Nasiriyah. The V Corps' reconnaissance assets found few concentrations of Iraqi forces

¹⁶² Janosko and Cheatham, "The Sound of Thunder," 4, 35.

¹⁶³ Gregory Fontenot, E.J. Degen, David Tohn, *On Point: The United States Army in Operation Iraqi Freedom* (Annapolis, MD: Naval Institute Press, 2005), 108, 171.

to strike.¹⁶⁴ With limited assets,¹⁶⁵ V Corps Artillery chose to prioritize rather than ensure continuous coverage. V Corps Artillery focused on moving forward to occupy PAAs capable of striking the Republican Guard Medina Division during the first thirty-six hours of the invasion. The artillery's movement forward was delayed by competition with other assets and dependence on the road networks, with off-road mobility "severely restricted by canals, drainage ditches, and poorly drained land."¹⁶⁶ Fortunately for US forces, the weak Iraqi defenses did little to further inhibit progress during the initial movement north. Fanatical Fedayeen fighters resisted the coalition the most fiercely, launching suicidal attacks, but to little effect.¹⁶⁷ The coalition air forces benefitted from the degraded Iraqi air defenses; during the campaign the Iraqis "fired antiaircraft gun batteries 1,224 times and launched 1,660 anti-air [surface-to-air] missiles" to down a grand total of six rotary wing and one fixed wing aircraft.¹⁶⁸

The V Corps Artillery's flexibility was challenged when its priorities changed to firing SEAD in support of the 11th Attack Helicopter Regiment's (AHR) deep attack on the evening of 23 March.¹⁶⁹ V Corps' joint SEAD plan for 11th AHR's attack included aerial electronic warfare, air strikes, and thirty-two ATACMS missiles from V Corps assets.¹⁷⁰ The joint SEAD plan became desynchronized from 11th AHR's attack, however, as the mission was delayed over two

¹⁶⁴ Fitzpatrick, "Joint Fires as They Were Meant to Be," 10.

¹⁶⁵ "It has been suggested that this war was won with less artillery than was employed in Operation Desert Storm, and that is certainly true. It is also true that we won with fewer divisions, fewer tanks and fewer infantry fighting vehicles (IFVs). In fact, the ratio of US artillery pieces to US tanks and IFVs in OIF was the same as or higher than the ratio in Desert Storm." Michael D. Maples, "FA Priorities After OIF," *Field Artillery* (September-October 2003), 1. By a different metric, "the FA in OIF was the lowest ratio of artillery pieces-to-troops in war since before World War I." William G. Pitts, "Overview: Field Artillery in Operation Iraqi Freedom," *Field Artillery* (September-October 2003): 2

¹⁶⁶ Bruce R. Pirnie, John Gordon IV, Richard R. Brennan, Jr., Forrest E. Morgan, Alexander C. Hou, Chad Yost, Andrea Mejia, David E. Mosher, "Land Operations," *Decisive War, Elusive Peace*, 61.

¹⁶⁷ *Ibid.*, 60.

¹⁶⁸ Millett, Maslowski, and Feis, *For the Common Defense*, 658.

¹⁶⁹ Janosko and Cheatham, "The Sound of Thunder," 35-36; for additional discussion of the effects of terrain, see Fontenot, et al., *On Point*, 99.

¹⁷⁰ Fontenot, et al., *On Point*, 184.

hours due to fueling issues. 11th AHR was unable to notify its fixed-wing support, losing the support for the attack. V Corps' 214th FA Brigade successfully fired twenty-nine Block 1 and three Block 1a ATACMS missiles thirty minutes prior to 11th AHR's time-on-target, followed by nine additional missiles requested during the attack, but doubts lingered among the pilots whether thirty minutes prior was too early for effective SEAD and served only to alert the Iraqis. The 11th AHR returned with significant battle damage, having accomplished little.¹⁷¹

Generals McKiernan, Wallace, and Conway decided that an offensive pause was necessary due to a combination of sandstorms, the lengthening logistics train, and a need to re-synchronize the Army and Marine advances.¹⁷² By the time the attack slowed down, the lead elements of V Corps had advanced over four hundred kilometers in six days.¹⁷³ The Republican Guard Medina and Hammurabi Divisions had displaced as 3d ID passed Najaf and begun to move south towards coalition forces, but halted and remained exposed when coalition ground forces seemed stalled by the sandstorm. General Moseley and the CENTCOM staff decided to attack the Republican Guard units from the air; despite the weather, the coalition was adaptive enough to see opportunity and exploit it.¹⁷⁴ General Wallace referred to this incident later when he stated, "there were episodes in the fight when operational maneuver caused the enemy to react; when the enemy reacted, it allowed us to employ joint fires against him, which, in turn, allowed our operational maneuver to be more successful...The complementarity between fires, maneuver and reconnaissance was evident at the corps down to the tactical level."¹⁷⁵ Two officers from the 1st Battlefield Coordination Detachment (BCD) explained General Wallace's reference more specifically:

¹⁷¹ Janosko and Cheatham, "The Sound of Thunder," 35-36; Fontenot, et al., *On Point*, 186-92.

¹⁷² Keegan, *The Iraq War*, 154-56.

¹⁷³ Franks, *American Soldier*, 505.

¹⁷⁴ Franks, *American Soldier*, 502-3.

¹⁷⁵ Hollis, "Victory in Iraq," 6.

When the land force's momentum was slowed by weather and heavy enemy action south of Karbala and around An Nasiriyah, the CFACC provided sustained air power against the Republican Guard divisions south of Baghdad to set conditions for the final push to Baghdad. When the enemy countered the effects of air power by dispersing his forces, the CFLCC's operational maneuver forced the enemy to either mass to defend the land approaches and be susceptible to joint fires or remain dispersed and be defeated in detail by the land juggernaut.¹⁷⁶

Iraqi conventional forces were accordingly degraded further prior to the climactic coalition attack toward Baghdad.

Artillery and mortars helped fend off suicidal attacks by Fedayeen forces during what has been referred to as the "Mother of All Sandstorms" from 24-27 March.¹⁷⁷ Ammunition shortages began to affect the field artillery by 25 March. The V Corps Artillery had to reassign planned fire missions against the Medina Division from the 214th to the 41st FA Brigade after 214th fired several immediate missions on the morning of 25 March. The V Corps was once again able to exploit ATACMS' range: the targets struck were between 125 and 195 kilometers away, in the vicinity of Karbala, Al Hillah, and Al Haswah. The 41st and 214th FA Brigades conducted limited deep fire missions between 25 and 30 March; therefore, most shaping in the V Corps zone was executed from the air.

The V Corps' LOCs were extended nearly to their limit by this point. The only maneuver force V Corps had committed was the 3d ID. It would be increasingly risky to proceed further without securing the LOC, so General Wallace requested the CFLCC reserve (the 2d Brigade of the 82d Airborne Division). On 26 March, General McKiernan released the 2/82d, who were given the initial task of isolating As Samawah. On 28 March, the main body of the 101st Airborne Division, commanded by Major General David Petraeus, began to contain An Najaf.¹⁷⁸

¹⁷⁶ Thomas L. Kelly and John P. Andreason, "Joint Fires: A BCD Perspective in Operation Iraqi Freedom," *Field Artillery* (November-December 2003): 20.

¹⁷⁷ Hollis, "Victory in Iraq," 8; Pirnie, et al., "Air Operations," *Decisive War, Elusive Peace*, 160-61.

¹⁷⁸ Fontenot, et al., *On Point*, 212-15.

Major General Buford “Buff” Blount, commander of the 3d ID, steadily lost patience with the offensive pause in front of the Karbala Gap, and believed that the risk from artillery, chemical, or biological weapons increased the longer he stayed. He developed a plan to penetrate the gap, relying on a feint by Colonel David Perkins’ 2d Brigade to draw Iraqi artillery fire, enabling coalition counterfire to weaken Iraqi fire capabilities prior to the actual breakthrough attempt. From Blount’s initial plan, General Wallace developed a corps plan for five simultaneous attacks to penetrate the Karbala Gap.¹⁷⁹

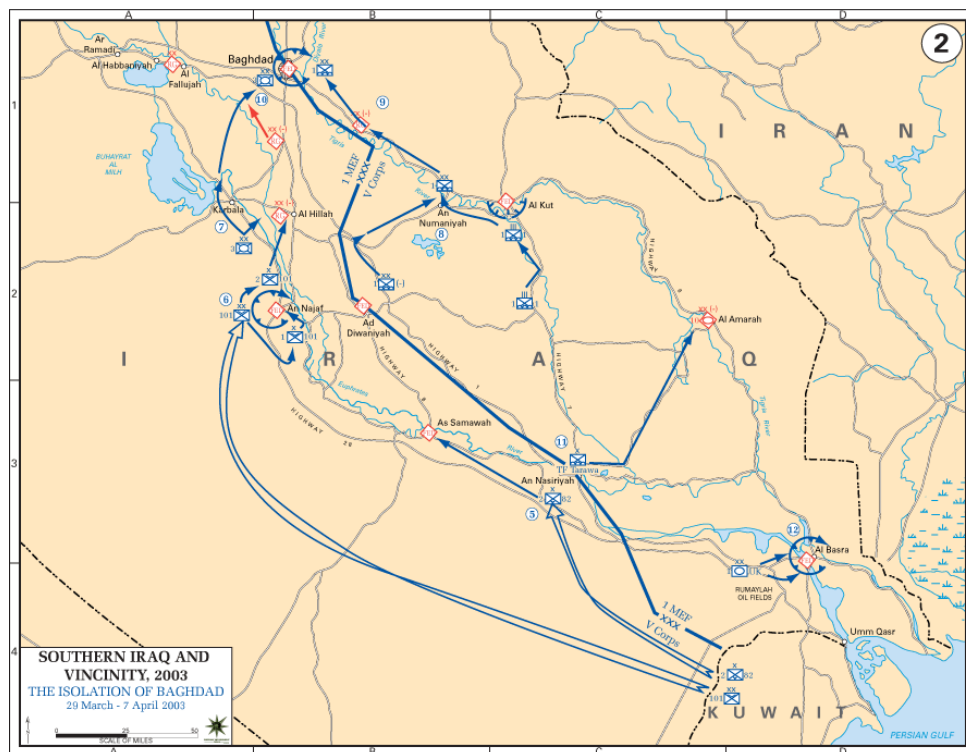


Figure 3. “Southern Iraq and Vicinity (sic), 2003. The Isolation of Baghdad, 29 March-7 April 2003.” Department of History, *United States Military Academy, West Point*, accessed 13 April 2017, <http://www.usma.edu/history/SiteAssets/SitePages/Iraq/Iraq02.gif>.

The V Corps Artillery task organization was changed for the final advance towards Baghdad; on 30 March the 214th FA Brigade was tasked to reinforce the 3d ID DIVARTY and repositioned thirty kilometers south of Karbala, while 41st reverted to GSR and occupied the

¹⁷⁹ Gordon and Trainor, *Cobra II*, 319.

214th's former position fifteen kilometers northwest of An Najaf.¹⁸⁰ By the time V Corps began its five simultaneous attacks on 31 March, the Republican Guard Hammurabi Division had been reduced from an estimated ninety-seven percent to seventy-three percent strength, but had been reinforced. Like the others, the Hammurabi had dispersed into smaller elements in hardened positions. The Hammurabi, together with the remnants of the Medina Division, would defend the north of the city between the V Corps and 1 MEF sectors. The Baghdad Division, estimated to retain sixty-nine percent strength, was positioned to defend inner Baghdad against an approach from the southwest.¹⁸¹

As the V Corps launched its attacks, a fierce battle ensued. The Iraqis repositioned artillery into urban areas, continued suicidal Fedayeen attacks, and the 3d ID made direct contact with Republican Guard elements for the first time as the Iraqis attempted to reposition forces to meet the attack.¹⁸² From 2-3 April, the 3d Infantry Division seized the al-Kaed bridge (Objective Peach) over the Euphrates River, "the single largest battle of the campaign against regular Iraqi forces."¹⁸³ Meanwhile, the 1st Marine Division approached Baghdad from the southeast. The coalition now had two broad options: attempt to besiege Baghdad or try to attack into the city.¹⁸⁴

Direct support artillery and CAS supported the battle to seize the al-Kaed bridge, with no mention by V Corps of interdiction or shaping directly related to that fight.¹⁸⁵ One incident illustrated the importance of immediate counterfire capability. Team A of the 3d Battalion, 69th Armor received accurate artillery fire from a probable battalion of 152mm howitzers, which continued for over an hour during a period when the 3d Infantry Division's Q-36 radar was

¹⁸⁰ Janosko and Cheatham, "The Sound of Thunder," 36.

¹⁸¹ Kirkpatrick, "Joint Fires as They Were Meant to Be," 10-11.

¹⁸² Kirkpatrick, "Joint Fires as They Were Meant to Be," 13.

¹⁸³ Pirnie, et al, "Land Operations," in *Decisive War, Elusive Peace*, 86.

¹⁸⁴ Ibid., 94-95.

¹⁸⁵ Janosko and Cheatham, "The Sound of Thunder," 36.

inoperable. Although the 3-69 battalion commander attempted to employ fixed-wing aircraft to seek out and destroy the Iraqi battalion, US forces were unable to acquire the Iraqi battalion until a Q-37 oriented and located the point of origin, and the threat was only neutralized when 3d DIVARTY initiated counterfire. Team A's armored vehicles protected them from the barrage, but a unit without such protection might have suffered heavy casualties.¹⁸⁶

The V Corps and 3d ID now believed that Saddam's forces were near the breaking point, and that a series of small, bold armored raids might cause the final collapse.¹⁸⁷ The 3d ID seized Saddam International Airport (soon renamed Baghdad International Airport) on 5 April in a daring "thunder run" by Lieutenant Colonel Eric Schwartz's 1st Battalion, 64th Armor, part of Colonel Perkins' 2d Brigade.¹⁸⁸ No UAVs were available for reconnaissance, and no Army aviation support was available due to the restraint on aviation north of the Euphrates. The Air Force provided some support from A-10 Thunderbolt II aircraft, including an attack on antiaircraft artillery that posed a direct fire threat.¹⁸⁹ No artillery was fired in support of the airport seizure.¹⁹⁰ The 214th FA Brigade, close behind, occupied a new PAA at the airport and was designated as the counterfire headquarters. Meanwhile, the 41st FA Brigade fired two SEAD volleys totaling twenty-five ATACMS Block 1 missiles to enable effective CAS over Baghdad, "significantly [degrading] the Baghdad missile engagement zone."¹⁹¹

The V Corps' ability to shape for 3d ID became constrained as coalition units entered Baghdad, and MLRS was only used with extreme discretion. The V Corps retained release

¹⁸⁶ Pirnie, et al., "Land Operations," *Decisive War, Elusive Peace*, 90-91.

¹⁸⁷ Pirnie, et al., "Land Operations," *Decisive War, Elusive Peace*, 95.

¹⁸⁸ A thunder run is a "rapid dash through hostile territory." David Zucchino, *Thunder Run: The Armored Strike to Capture Baghdad* (New York: Atlantic Monthly Press, 2004), 13. The same book includes a narrative of the attack on pages 60-65.

¹⁸⁹ Zucchino, *Thunder Run*, 31.

¹⁹⁰ Pirnie, et al., "Land Operations," *Decisive War, Elusive Peace*, 96-97.

¹⁹¹ Janosko and Cheatham, "The Sound of Thunder," 36-37; Kirkpatrick, "Joint Fires as They Were Meant to Be," 12.

authority for ATACMS, and the M26 MLRS rocket armed with DPICM was the only other MLRS option available in 2003. There were no precision guided munitions (PGM) available for field artillery cannons or launchers. The 3d ID would henceforth depend on air support and its DIVARTY, primarily firing HE to reduce duds in urban areas, to seize its objectives.¹⁹² Baghdad was divided into fifty-five zones, in what was called the “Urban CAS Concept.”¹⁹³

General Blount wanted to further disrupt and pressure the Iraqis, and accordingly planned another thunder run by the entire 2d Brigade. Colonel Perkins, instead of another raid, wanted to seize key infrastructure near Saddam’s palace complex, stay overnight if conditions permitted to demonstrate the coalition’s inevitable ability to impose its will, and hopefully end the war.¹⁹⁴ It was perhaps the most audacious plan in a campaign premised on audacity.¹⁹⁵ Perkins’ final thunder run into the heart of Baghdad on 7 April was enabled by artillery and air support. Lieutenant Colonel Kenneth Gantt, commanding Colonel Perkins’ direct support artillery battalion, rode with Perkins in the command vehicle, and coordinated indirect fires during the attack.¹⁹⁶ The 2d Brigade seized its objectives and remained inside the city, repulsing all Iraqi counterattacks. The 1st Marine Division linked up with 3d ID elements and completed the encirclement of Baghdad on 9 April. Organized Iraqi resistance had largely ceased by the time Task Force Tarawa seized Tikrit on 14 April.¹⁹⁷

¹⁹² Thomas G. Torrance and Noel T. Nicolle, “Observations from Iraq: The 3d Div Arty in OIF,” *Field Artillery* (July-August 2003), 33-34.

¹⁹³ Pirnie, et al., “Air Operations,” in *Decisive War, Elusive Peace*, 173.

¹⁹⁴ Zucchini, *Thunder Run*, 67-72.

¹⁹⁵ “To seize a city of 5 million people defended by thousands of troops, they were sending in about 970 combat soldiers in sixty tanks and twenty-eight Bradleys, plus a few armored personnel carriers.” Zucchini, *Thunder Run*, 82.

¹⁹⁶ Zucchini, *Thunder Run*, 102-03. Lieutenant Colonel Gantt’s presence became even more important for fire support coordination after the brigade TOC was struck and disabled by a surface-to-surface missile.

¹⁹⁷ Pirnie, et al., “Land Operations,” in *Decisive War, Elusive Peace*, 99-100.

After the coalition secured Baghdad, V Corps Artillery, left with little more to do, transitioned its focus to moving captured enemy ammunition for consolidation.¹⁹⁸ On 1 May 2003, President Bush declared an end to major combat operations.¹⁹⁹ The battle for Iraq was only beginning, but further analysis falls outside the limited scope of this monograph.

The coalition casualties between 19 March and 1 May 2003 had been light, with 109 US and six UK servicemembers killed in action. Iraqi casualties must have been higher, probably in the thousands, but no one counted accurately. Approximately seven thousand Iraqi soldiers surrendered to coalition forces; most simply went home.²⁰⁰ The Coalition Provisional Authority disbanded the Iraqi Army entirely in May 2003, clarifying the status of those who remained.²⁰¹

According to the RAND Corporation, “between March 19 and April 20, 2003, coalition air forces flew approximately 17,000 strike sorties. The overwhelming majority of these sorties did not have preplanned targets.”²⁰² In terms of ordnance, 15,592 of the DMPIs struck were KI/CAS targets, or seventy-nine percent of the total. The remainder of DMPIs struck were categorized as suppression of regime command and control (nine percent), air and space supremacy (seven percent), suppression of theater missile defense/WMD delivery systems (four percent), and other categories in support of CFLCC (one percent).²⁰³ Sixty-eight percent of air-dropped munitions were precision guided, compared to six percent in Operation Desert Storm.²⁰⁴

¹⁹⁸ Janosko and Cheatham, “The Sound of Thunder,” 33.

¹⁹⁹ “Bush Makes Historic Speech Aboard Warship,” *CNN*, 1 May 2003, accessed 10 March 2017, <http://www.cnn.com/2003/US/05/01/bush.transcript/>.

²⁰⁰ Keegan, *The Iraq War*, 204-05; Stephen T. Hosmer, “Why the Iraqi Resistance Was So Weak,” *Decisive War, Elusive Peace*, 183-84.

²⁰¹ Crane, “Military Strategy in Afghanistan and Iraq,” in *Understanding the US Wars in Iraq and Afghanistan*, 132-33.

²⁰² Pirnie, et al., “Air Operations,” *Decisive War, Elusive Peace*, 291.

²⁰³ US CENTAF, “OIF By the Numbers,” 5.

²⁰⁴ Pirnie, et al., “Air Operations,” *Decisive War, Elusive Peace*, 151.

Overall, V Corps' cannons and launchers fired approximately 18,500 rounds, 857 MLRS rockets (mostly from 3d Infantry Division's direct support assets), and 414 ATACMS missiles through the end of major combat operations on 10 April 2003.²⁰⁵ The ratio of ATACMS missiles was 305 missiles fired at planned targets, while 109 were fired at immediate targets. Marine artillery of the 11th Marine Regiment fired 19,883 rounds.²⁰⁶ British artillery fired an additional 22,193 rounds.²⁰⁷

What did the invasion prove? Sir Lawrence Freedman observed, "[Secretary Rumsfeld] had been seeking to make a point about how a war could be fought and won with far fewer forces than would hitherto have been thought prudent...the lack of numbers soon appeared imprudent as US forces struggled to cope with an insurgency."²⁰⁸ The relatively small coalition fought hard and well, and joint cooperation was greatly improved from Desert Storm. Saddam's regular forces rarely concentrated, and when they did, they were destroyed by aircraft and artillery. It would be misleading to believe that the victory was as swift as it appeared. Saddam's regime had been weakened for twelve years before OIF finally destroyed it.

Conclusions

Marshal Slessor's warning about forgetting the lessons of the last war, from the epigraph which opened this monograph, seems a fitting place to start its conclusion. The conduct of Operation Desert Storm was imperfect, but the plan for OIF sought transformation for transformation's sake rather than compelling operational justifications. Nothing in Operation Desert Storm or OIF was revolutionary for joint fires in the same way that indirect artillery fire or aircraft were when they were introduced; rather, the coalition in each campaign benefited from

²⁰⁵ Janosko and Cheatham, "The Sound of Thunder," 33.

²⁰⁶ Maples, "FA Priorities after OIF," 1.

²⁰⁷ Pitts, "Overview: Field Artillery in Operation Iraqi Freedom," 2.

²⁰⁸ Lawrence Freedman, *Strategy: A History* (New York: Oxford University Press, 2013), 223.

incremental improvements in technology, refining techniques and improving joint cooperation.²⁰⁹

There is nothing wrong with that. Army and joint fire support, while there was still room for improvement, was executed well and contributed to success at the operational and tactical levels. Aerial platforms have exponentially increased their precision since 1990 at striking targets and limiting collateral damage, whether employed for CAS, AI, or strategic targets. In both Operation Desert Storm and OIF, US and coalition air supremacy punished the enemy and reduced friendly losses. The field artillery has developed its own precision capabilities since 2003, but reduced force structure. It remains to be seen how much precision can make up for mass.

The effectiveness of joint fires depends not only on the precision of the technology and the skill of the operator, but also on the quality of intelligence. As a V Corps planner pointed out after OIF, “you can only kill what you know is out there.”²¹⁰ In both Operation Desert Storm and OIF, coalition forces rarely came under accurate or sustained fires. When they did, the point of origin was usually acquired quickly and neutralized by one of many available fire support systems within striking distance. The United States should make every effort to maintain this qualitative advantage in target acquisition and counterfire capability.

Anthony Cordesman, writing for the Center for Strategic and International Studies in 2003, was cautious about predicting universal dominance from the defeat of Saddam’s forces:

For most of the nineteenth century, well-equipped Western armies achieved quick and decisive victories-- often at great odds-- against ineffective opponents. These same armies, however, were generally unable to predict their capability to fight each other, or the actual war-fighting impact of the tactics and weapons that were felt to be “transformational” at the time.²¹¹

If rivals or adversaries perceive that they are gaining parity with US forces, they may become

²⁰⁹ Bailey, *Field Artillery and Firepower*, 410, 440. In this context, revolutionary means tradition-shattering, deriving from the theory of Thomas S. Kuhn in *The Structure of Scientific Revolutions*, 3d ed. (Chicago: University of Chicago Press, 1996), 6.

²¹⁰ Kirkpatrick, “Joint Fires as They Were Meant to Be,” 20.

²¹¹ Anthony H. Cordesman, *The Iraq War: Strategy, Tactics, and Military Lessons* (Westport, CT: Praeger, 2003), 230.

more aggressive and less cautious about provoking a US response. It is not very far-fetched, by that logic, to imagine a future war that contains similarities to both Operation Desert Storm and OIF; a conventional fight where an opponent, at the very least, may exploit an opportunity to “bloody America’s nose,” followed by a period of guerilla warfare if US forces prove dominant. In such a war, it would be necessary to conduct operational maneuver and win, then transition swiftly to fighting irregular forces.

This analysis of two recent campaigns hopefully has shown how the different components complemented each other; joint fires were most effective when used to facilitate operational maneuver, and vice versa. The RAND Corporation concluded in 2015 that, “on balance, coalition air and ground forces worked together in OIF better than they ever had before.”²¹² The US military has clearly made significant progress in joint operations since 1991. The battles we won will not be irrelevant, if we remember their lessons.

²¹² RAND Corporation, *Decisive War, Elusive Peace*, xxiii.

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